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COMPUTER WEEKLY

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NEWS IN BRIEF

ABS waives BCSL option

ABS COMPUTERS has decided against exercising its option to buy the share capital of Business Computers (Systems), BCSL. The option, which expired on December 31, dates back to mid-1978 when the two companies linked up to boost sales. John Ilsden, the ABS managing director, says: "Co-operation between ABS and BCSL will be maintained."

Xerox launch

XEROX is understood to be about to launch a touch-screen office information terminal designed for use by managers. By pressing squares on the screen, each of which can be given a different function by software, even someone with no keyboarding skill would be able to use the unit, reducing reliance on secretarial support.

Network lead

UK UNIVERSITIES have taken a world lead in communications between different types of computer, according to the Joint Network Team. In a report on its activities from April 1979 (when it started) to last August, the JNT, which advises the Department of Education and Science's Computer Board and the five research councils on data communications, gives a firm recommendation to the Yellow Book transport service over its rival ECMA proposal, which it says is less conducive to open systems interconnection.

Scottish venture

A JOINT venture has been set up between the Wolfson Microelectronics Institute and Computer Applications Services in Scotland to concentrate on marketing microtechnology and microelectronics applications to commerce and industry.

Copyright claim by ACT Microsoft

AS a major software copyright case brews up in the UK over the copying of the Visicalc program sold by ACT Microsoft, President Carter has signed the controversial US software copyright Bill that enables a user to copy a proprietary program under certain circumstances (CW, July 3, 1980).

ACT Microsoft is seeking an injunction later this month to prevent a private individual, David Bolton, from selling a floppy disc based product called Visicalc Backup which enables one copy to be made of the business planning package if the host is an Apple II microcomputer.

ACT Microsoft trod carefully at first because Bolton appeared only to be selling Visicalc Backup directly to end users through magazines like Practical Computing. But copyright specialist Alistair Kelman, who is acting for ACT Microsoft, discovered just before Christmas that the package was being sold by the Lion House microcomputer store in Tottenham Court Road, London, and in Brighton.

ACT Microsoft believes that Bolton's wholesaling of Visicalc Backup makes its case far stronger because its losses are inestimable. Visicalc costs £125 and a replacement copy is only made available by ACT at a nominal charge if the user returns the damaged first copy. Visicalc Backup costs £18.40 at Lion House.

The Visicalc Backup diskette holds code for cracking the Visicalc protection mechanism. After Visicalc has been loaded into the memory, the Backup diskette is re-loaded and Visicalc dumped on to it. A protection mechanism is created making subsequent copies impossible to make, in theory, but ACT Microsoft boss David Rowe claims that one of his programmers has almost broken the code.

The US copyright act enables a user to program provided that it is "an essential step in the utilisation of the machine" and that the new copy is "for archival purposes only." In this way regular archival copies can be taken to guard against computer fraud.

Another significant aspect of the Bill is that copyright applications on software must disclose the first and last 25 pages of source code, a requirement which has raised fears in the US software industry that too much of many programs will have to be made public.

President Carter

In the UK, progress towards legislation is expected to reach the stage of a Green Paper based on the Whitfurd Report some time in the spring. It will be published by the Department of Trade.

Ian Lloyd MP said the software copyright would be a major subject of discussion for the new Parliamentary Information Technology Committee (CW, October 23) which meets for the first time on January 21.

US curbs military software exports

EXPORTERS of software from the US are faced with a formidable set of new regulations which have been rushed into effect to prevent Third World and Communist bloc countries getting hold of programs which could be adapted for military use.

The clamp-down comes after the US Department of Defence became anxious that vague controls on software export constituted a security risk.

The stringent new rules, introduced by the Commerce Department's Office of Export Administration are aimed at clearing up ambiguities in export control.

The new regulations define a high framework, even for software exports to the Free World. "The feeling was that there were no controls in this very difficult area of monitoring software export," explained Archie Andrews, Director of Exporters Service Staff at the Department of Commerce.

"The software industry has mushroomed in the last five years, and as software apart from hardware is becoming a most important commodity it doesn't do to let it just drift out, uncontrolled," he told Computer Weekly. "The idea is to get a handle on the software industry without the aim of controlling security."

Exporters of hardware will have to itemise software to be used with the system, described in detail where the equipment is bound for Communist countries.

Software packages will have to be identified with instructions on what the package is and exactly what it does, and guidelines are under development to define what may and may not be exported, which will provide a safety net for potential security risks.

Exporters must identify source or object code, and any documentation such as support manuals which are to be shipped with the software. Firms providing training with their packages must also describe the scope of training, and where software maintenance is to be provided, its nature and means must also be described.

Exporters must file a statement as to whether the software to be exported has been previously exported in the same form, with any changes fully explained.

The relationship of each program to the avowed end-user of the hardware must also be described.

The details of the regulations were published in the Federal Register on December 5. Although they are in effect already, this is on an interim basis and they are open to written comment from companies affected, until February 4, 1981.

It is not yet clear whether the regulations will have an adverse effect on the US software export trade. "That will all depend on how the law is administered, and those affected have plenty of time to comment," said Andrews.

Union threat to PAYE system

COMPUTERISING the Inland Revenue's Pay As You Earn scheme (PAYE) could be blocked as a result of the unions' reaction to the government's 6% pay policy for public sector workers and demands for big manpower cuts.

Any action would probably hinder the work of systems analysts developing the new scheme, say union officials.

The £150 million system is due to be installed between 1983 and 1988, West Midland tax offices being the first to go live, and will be based on ICL 2966 kit. The blacking would also minimise the ability to adjust taxation levels before full computerisation.

The department's main union, the 65,000-strong Inland Revenue Staff Federation, favours computerisation provided there are no job losses.

But a government decision to ignore findings of the independent Pay Research Unit on the 6% limit has angered the federation.

Federation general secretary Tony Christopher said, "We need a computer system and the sooner we get one the better. But if the government is not willing to pay the members, but we must be practical —something the government is not being at present.

"We will be meeting with other Civil Service unions to try to formalise a united pay claim and programme of action. Computerisation blackings would sadden me personally."

Federation officials are being pressed by their members to call an emergency conference to consider co-operation on computerisation.

Christopher thought such a conference would reject co-operation outright. He said that the 8,000 manpower cuts could have been made via natural wastage up to 18 months ago but that the attitude of the present government had changed this.

The revised ICL system was contested because of a government "buy British" decision. Revenue and government in-house computer experts had cast doubts on ICL's ability to meet the requirements of a more ambitious scheme and had favoured IBM or Mini-Christopher said: "We backed ICL from the beginning."

An 18-month delay will occur between commissioning the West Midland pilot scheme in 1983 and progressive introduction of the system throughout the UK.

Software boost

WEST German firm Triumph Adler, manufacturer of office equipment and computers, has set up its own software association.

Nashua pulls out of Cork

ONLY two months after announcing it would provide 200 jobs in Cork, with the prospect of [illegible] eventually, Nashua has decided to pull out of its £15 million project to manufacture floppy discs at a plant in Carrigrohill, a few miles east of Cork City.

The surprise decision was announced by the company to improve productivity at its Aberdeen plant, worldwide trading and market conditions and the high level of interest rates in the US.

The Irish Industrial Development Authority had approved grants for the project. It said it was disappointed by the decision, but it was now negotiating with a major electronics firm to set up in the factory it had already built for Nashua.

The IDA is understood also dissatisfied with the way in which it feels Nashua pressured it into public announcement of the project at an early stage.

French secon source for National

FRENCH electronics [illegible] Sagem is to second source [illegible] Semiconductor's 256K and one-megabit bubble memory devices, with volume production the former planned for the [illegible] this year.

National plans to introduce one-megabit, the NBM 2201, on in the year, and it will be fur-pin compatible with the NBM 2256.

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REPORTS OF GOVT AID DENIED

ICL looks for Japanese link

by Kevin Cahill

ICL could turn to a Japanese partner to boost mainframe sales and stem the cash drain currently hitting the company. A three-year-old "information exchange" agreement with Hitachi may be upgraded to form the basis of a joint development and marketing operation for mainframes.

Though ICL denies there have been any recent formal talks, detailed discussions are understood to have taken place with a Japanese delegation which visited the UK last March. At that time ICL knew the government had postponed replacing its 1900s with currently-produced 2900s, and that a serious build-up of 2900 stocks was under way.

Chairman Philip Chappell is to meet investment institutions in a series of hurriedly-arranged lunches before the annual general meeting on February 3, and is expected to reveal details of the company's recovery strategy. A tie-up with Hitachi — in which ICL's software expertise would be the major attraction for the Japanese company — is one option.

Urgent

While reluctant to ideotify which of their number was involved, Japanese sources confirm that talks along these lines have taken place. The growing stock of unsold mainframes, and the urgent need to find a marketing outlet for the software products associated with them, make such a link logical for ICL.

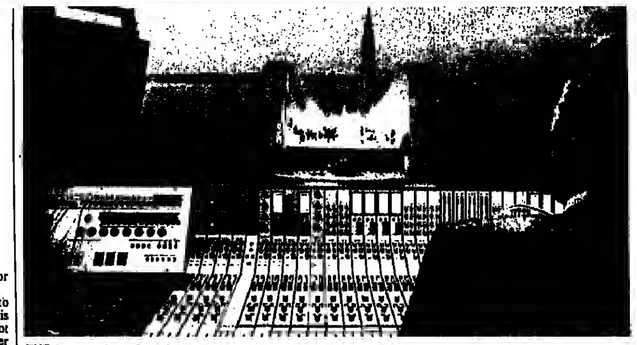
With a cash drain of between £4 and £5 million a month, depending on the view taken of the balance sheet, ICL is heading for a cash shortfall of about £50 million for the current year.

ICL's banks are understood to be creating a line of credit for this amount, but this alone will not cover the company's needs. Other reports, strenuously denied by ICL, say that the company is about to approach the government for a £60 million underwriting for its R&D effort next year.

The Department of Industry's failed mission to obtain money from oil giants Shell and BP for ICL lend urgency to the company's efforts to find a plausible recovery plan before the shareholders' meeting.

Meanwhile ICL shares dropped a further 9p from their recent low of 70p (against last year's high of 196p) on the release of the annual

● Turn to back page



THE impressive view from the lighting box for a new floating theatre at Lake Constance in Switzerland. All lighting for each performance can be pre-programmed into the computer-controlled system and effected at the touch of a button. The console also controls several sound sources (microphones and tape recorders) which can be mixed, broadcast and amplified by about 50 loudspeakers. The system, manufactured by Siemens, is not yet available in the UK.

First 256K RAM due next year

VOLUME production of the first 256K dynamic RAM, measuring about 5x9mm and costing between £20-£30, will begin at the end of February 1982. The supplier will be Toshiba in Japan and the most likely first customer will be DEC in the United States.

Sources in Toshiba explained that for commercial reasons it was not possible to give precise configuration of either the date or customer, but that a major announcement would be made at the International Solid State Circuits Conference, ISSCC, in California next month.

Toshiba/Nippoo Electric Co announced the technical details of their jointly developed 256K RAM at last year's ISSCC. Initial samples will be available by the end of this year.

Production lead times in Japan are seldom longer than 18 months to two years, and work on the production of the 256K RAM has been going on since the end of 1978 at Toshiba's Okia factory in Southern Japan.

NEC, which is expanding its production and marketing in the UK, was one of the partners with Toshiba in the industry/government VLSI consortium which set up the 256K project.

A spokesman at NEC said that the February 1982 timescale "could be right," but shied away from giving specific confirmation.

● "Unbelievable" 256K RAM news. See Micro News, page 8.

NEC moves into UK with full range

NEC, the Japanese conglomerate, best known in the UK and Europe for its Spinwriter thimble printer and as a supplier of microchips, expects to be selling a full range of computer equipment in Europe and the UK by the end of 1981.

Like ICL in Britain, NEC is a builder of non-IBM compatible systems. A company spokesman says the company will continue to build its own mainframes in Japan, but these will not be offered in Europe.

The company will launch a personal computer system, centred around the PC-8000, which was first shown at Compec last year on an ad-hoc basis. However, with over 300 inquiries made at the exhibition, many from dealers and distributors, the company has amended its plans and will formally launch the 32K version of the machine later in the year.

The basic PC-8000 system will consist of a VDU keyboard, processor and cassette tape recorder. N-Basic, a derivation of Microsoft Basic, will be supplied with the system, which is expected to retail for about £600. This will place the PC-8000 in direct competition with Pet and Apple.

A small business system, probably based on the Astra range which NEC sells in America, will also be introduced.

Govt to drop job system

THE award-winning computerised job-matching scheme, Capital, planned for 150 Job Centres throughout the country, has been abandoned by the government.

Employing a computerised vacancy job bank instead of Capital (Computer Assisted Placings In The Area of London) will save the Manpower Services Commission an estimated £5.1 million by 1984.

Capital, which won the British Computer Society's annual Social Benefit award in 1979, has been operating in 15 North East London Job Centres for three years.

The Manpower Services Commission has just obtained co-operation from Civil Service Union members for the installation of the equipment elsewhere in the country (CW, November 22).

BRIEFING . . . BRIEFING . . . BRIEFING

NHS staff ban overtime

COMPUTER staff in the National Health Service have started an overtime ban in pursuit of a claim for parity of pay with private industry. Their union, the National and Local Government Officers Association, has also called for a ban on co-operating with agency staff and covering for absent colleagues.

On Friday further consultations will take place to decide whether to add one-day strikes to the action. About 1,800 staff are involved.

Collaboration

AMERICAN Micro Devices has signed an agreement with Siemens for collaboration in the production of CMOS circuits, particularly for use in telecommunications.

150m micros

WORLDWIDE microprocessor sales for 1980 are estimated to be 150 million, double the sales of 1979. The biggest selling company was Texas Instruments, which sold 50 million four-bit TMS1000s. About 50 million eight-bit microprocessors were sold with the 8080 family selling most.

Factory to close

THE Data 100 factory at Cork, Ireland, which employs 120 people, looks like being closed down as part of the 300 redundancies in Europe planned by ailing US parent Northern Telecom Systems Corp (CW, January 8). About 70 staff at Data 100's factory at Hemel Hempstead are also losing their jobs.

100 new jobs

RATIONALISATION of the Trustee Savings Bank's computer centres will cost 188 jobs but will create up to 100 new ones at a purpose-built centre at Wythenshawe, Manchester. The Wythenshawe centre will run a Univac 1/83 based system and will handle all the TSB's 4m accounts by the end of 1982.

Held out

PRODUCTION difficulties this week mean that part 4 of our Data Analysis series and the last of our software Minority Languages articles have been held out. Normal service resumes next week.

Troubled CAP says: 'We are not for sale'

ALEX D'AGAPEYEFF, chairman of software giant CAP, has denied rumours from the City that parts of the software house are up for sale. "It's true that we propose to announce major strategic plans for the company," he told Computer Weekly, "but this one is news to me!"

Of the rumoured takeover bid, hinted to have come from CAP's rival Logica, he said "These are probably echoes from the recent sale of CPP — it's certainly the first I've heard of it."

Speculation is rife about CAP's future as the company has had a tough couple of years. It expanded rapidly in the early Seventies, building on its mainframe expertise, but recently profits have tumbled, following a change of emphasis in the software market and the failure of CAP's heavy investment in Microbit to pay the expected dividend.

Since CAP's traditional markets continue to shrink, next week's announcement will probably include some rationalisation of resources, with more emphasis on the sale of package software and less on "one-off" projects. CAP might also revamp its marketing image with an aggressive price-reducing policy.

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COMPUTERVIEW

Man for the job

THE one piece of good news facing the computer industry amid 1981's pallor of gloom is the appointment of Kenneth Baker to oversee all computer and electronics matters at the Department of Industry.

Baker is an example of that extremely rare animal, a Minister who actually knows something about what he is in charge of, and his enthusiasm for the computer industry and experience in it have caused his appointment to be received with glee by many of our business leaders. One managing director described himself as "over the moon".

Included in Baker's brief will be not only the information handling technologies which had been Adam Butler's responsibility, but also microelectronics, which by an arbitrary decision had been given to Lord Trenchard. Butler is moving to the Northern Ireland Office, having made little impact in the short time he has held the Information Technology job. Trenchard is being replaced by Norman Tebbit, from the Department of Trade.

Baker's time will certainly not be devoted exclusively to computers: his bailiwick includes the whole of the private sector of British industry. The significance of his appointment for us is that it indicates, in Baker's words, "the Prime Minister's personal interest in and commitment to" this industry, which she believes is one of the UK's "greatest growth areas, one which will create a great deal of wealth". Baker adds: "This is very much her initiative."

The other important side to Baker is that he is an interventionist, believing that government support is essential for the UK to stand up against overseas competition. There are many in our industry who would prefer to see such intervention out in the open rather than have it hidden under, for instance, supposedly open tendering policies through which locally owned firms end up with the contracts anyway. Norman Tebbit is a hard-line monetarist but he will be balanced by Baker's distinctly left-wing (for a Tory) views.

Baker seems to have impressed Mrs Thatcher despite his earlier associations with Mr Heath, and, in some ways more importantly, he has succeeded in getting Sir Keith Joseph to listen to him. That in itself is no bad thing; Joseph certainly needs to listen to someone. Baker's main problem now is that he has to implement all the things he has been campaigning so vigorously for all these years: a long-term policy, a computer in every school, awareness in Whitehall.

Fortunately, there are few people better able to do it.

Talked down

LAST week the publication of ICL's report and accounts caused yet another dive in the share price. The company, investors are saying, is really on the floor.

But there is more than a little evidence that the City – whose opinion manifests itself in the Stock Exchange quotation – is up to a particularly clever manoeuvre, which is to "talk down" the share price. It then becomes cheap, and eventually very profitable, for the Institutional investors to get into the shares.

This is not to say there is no legitimate concern in the City at ICL's performance. There is. But the valuation is out of all proportion to the real causes for worry.

One is that half of ICL's profits have been absorbed by interest charges on the debt. This could have been avoided if the company had gone for a rights issue when urged to do. The present cash crisis is traceable to that error.

Similarly, it is impossible to believe that the ill-conceived attempt to attract 30% of Shell as investors was not undertaken by someone at ICL knowing. It has cost the company millions in market capitalisation and it has failed.

It is also unclear how likely are the prospects of write-offs because of the downturn in rental and the rise in leasing of the company's equipment. The City's own merchant banker Philip Chappell, has done little to assuage fears.

Perhaps it is not all ICL's fault. There are 2900s sitting around in warehouses because the government decided to extend the life of its ageing 1900s caused by the gains made from the decision to end the PAYE contract.

But the City has gone well over the top. There is little more noise from the ICL wings about successes like the ME29 and the advances in software sales (not just developments) needed.

LETTERS

2900 series a proven technical success

YOUR recent story about the computing service at Oxford University will have left many readers believing that you were criticising the capabilities of the ICL 2980. May I provide a contrasting picture; to help readers to form a balanced view of the large ICL machines?

At SWURCC we run a 2980 attached to the South West Universities Computer Network. This machine provides half of the total batch computer power used by five universities, provides a local interactive service to SWURCC staff, and handles considerable communications traffic. This week we have extended an interactive service to computer centre staff at each of the five universities. The 2980 helps us to provide a stable, usable and efficient service to our several hundred users.

It may be suggested that, while the 2980 is an excellent batch engine, it is less successful in providing interactive computing. Here again experience suggests the opposite. Queen Mary College in London runs a 2980 providing a mixed interactive and batch system. ICL is committed to demonstrating during 1981 that this system can support 150 active terminals (on a configuration significantly smaller than the Oxford University system). I understand that this benchmark has already been passed, unofficially, on the QMC machine, and just awaits to be demonstrated formally.

Outside the universities, the United Kingdom Atomic Energy Authority machine at Culham is apparently providing an excellent interactive service to a large user population. These are but three examples where I have recently spoken to computer centre (ie *non-user*) staff.

Providing a general interactive service to a large user population can be difficult and expensive, as all mainframe manufacturers have discovered. There are dozens of reasons why the services provided by a particular installation may be temporarily disappointing, yet there is an unfortunate tendency for readers to blame the computer manufacturer even if the newspaper report does not explicitly do so.

ICL's 2900 series stands comparison with any of its competitors. The hardware architecture makes other machines look antiquated; the software displays a uniformity of design which should provide a sound foundation for developments for many years to come.

No harm is done by informed criticism, but it should be made against the right background. The 2900 series is a proven technical success; with fair publicity (and a fall in the pound) it will be a commercial success, too.

MARTYN THOMAS
Deputy Director and Systems Manager
SW Universities Regional Computer Centre,
Bath.

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly, or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

School plea for old manuals

AS a result of the generosity of a local company Gillott's School, Henley-on-Thames, has two Olivetti TE 300 teletypes. Unfortunately the company was unable to give us any manuals for these machines and Olivetti is unable to help us as the machines are now obsolete.

May I ask if any of your readers has a set of manuals which they no longer require.

Gillott's School, A.W. FAULSON
Henley-on-Thames.

1984 and all that . . .

THIS week's example of the strange things people say in the media about computers was sent in by C. Smith of South Norwood, London, who comments: "I see a remote 'Silicon Valley' companies is an article called 'Orwell's computer' is kept going through power cuts and strikes."

New Statesman, London

$24bn minicomputer sales in Europe by 1989 forecast

MINICOMPUTER hardware sales in Europe will amount to $24,000 million overall between 1979 and 1989. Separately sold software for minicomputers will bring in another $3,000 million.

These forecasts are included in a study* of the European minicomputer market from consultants Frost and Sullivan. Hardware shipments will include nearly $6,000 million worth of disc drives while printer and terminal sales will have a cumulative value of $2,800 million.

Applications software will account for $1,100 million worth of business while systems software and program generating software will each bring total sales of around $900 million over the period.

Breaking down the market by user type, the study forecasts that shipments to industrial and data processing users will both grow from not much more than $300 million in 1979 to $1,700 million in 1989. Both areas will generate $9,000 million worth of business over the 10-year period.

Sales for data communications and terminal applications will grow from $152 million in 1979 to $704 million in 1989, bringing $4,100 million over the decade while the market for minicomputers in word and text processing applications will rocket from $1 million in 1979 to $440 million in 1989. Sales will total $1,300 million.

Looking at the market on a country basis the study sees business in West Germany amounting to $6,700 million while France, the UK will each account for $5,000 million.

★*The Minicomputer and Associated Peripherals and Software Market in Europe. 960 pp. £1,950. Frost & Sullivan Ltd, 104-112 Marylebone Lane, London W1M 5FU. Tel: 01-486 8377.*

Credit card phone calls on trial

BRITISH TELECOM is to start trials early this year of a pre-paid credit card for telephone calls – and they will be sold over the counter at newsagents, tobacconists and local Post Offices.

It is thought the cards could contain a 4-bit chip, but British Telecom was tight-lipped over the design, to deter anyone from copying the idea.

Callers will insert the card into a slot in the phone and the cost of the call will be erased as the caller speaks.

A British Telecom spokesman said the cards would be put on trial at airports and railway stations in Birmingham, London and Manchester as well as at the National Exhibition Centre.

But card users will have to pay 25% more for calls as units will cost 5p each instead of 4p at present. There will be two sizes available – one with 40 units costing £2 and one with 200 units costing £10.

Pet aids kidney patients

PREDICTIONS from a Commodore Pet are helping doctors at Manchester's Royal Infirmary to carry out kidney transplants before patients need dialysis treatment.

So far nearly 50 patients have benefitted and a consultant physician said the principle on which the Pet was programmed was predicting a year in advance when dialysis treatment would be needed. Doctors could also pinpoint the ideal time for a transplant.

The system runs with a 8032C Computhink disc drive.

The Pet was donated by the Preston branch of the Kidney Research Association.

Wilkes Computing for DEC Terminals

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*Digital Equipment Corporation Ltd.

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Siemens backs IC plant in S Africa

INTEGRATED circuits are to be "home produced" in South Africa after the formation of a new company, South African Micro Electronic Systems. It was set up by the SA Industrial Development Council and Siemens SA, which owns 49%, to further the country's local electronics industry (CW, December 4, 1980).

The South African Post Office is at present undertaking a massive updating program, altering its old and overloaded telephone system to electronic digital switching. This move has boosted an industry which was already preparing for a boom, encouraged by a thriving economy and, ironically, sanctions.

Production facilities have been designed to be flexible, since the South African market is comparatively small, but needs a wide range of products. Custom business will form an important part of the company's output of LSI chips.

Although the move was prompted by the South African Post Office, the country's entire electronics industry will benefit from the plant, which will boost development of local products. Technical know-how will initially be drawn from Siemens in Germany, and probably other sources in Europe. Manufacture should start later this year.

Production of LSI wafers will dominate, both plastic and ceramic encapsulated. There will also be a sophisticated test service to monitor the quality and reliability of components.

Production for the commercial market should start later this year. Recently the SA Industrial Development Council's chairman, Abie Van der Berg, warned the world that "the local electronics industry is further along the road to self-sufficiency than most people realise" (CW, December 4, 1980); SAMES will certainly bring the country closer to its goal of an independent electronics industry, unhampered by sanctions.

Since the plant and equipment were ordered well before recent price rises, South Africans have got themselves a bargain, but the plant will bring an end to the days of local telephone calls – at present still on the mechanical system – which can last all day for a connection charge of less than 3p.

GEC action likely to hit IBM systems software policy

IBM MAY be forced in future to supply users of plug-compatible processors with System Installation Productivity Options as a result of the action against the industry giant initiated by the EEC Commission at the end of last year (CW, December 25).

SIPOs are "off-the-shelf" combinations of free public domain systems software and charged program products that are generated and duplicated by IBM to suit the requirements of most of its users, their needs being more or less the same. SIPOs are significant because of IBM's policy of charging for an increasing proportion of systems software and making the free systems control programme virtually unusable by itself.

At any time there are basically three current SIPOs available, one each for MVS, VM and DOS/VSE users.

IBM has no objection to supplying SIPO copies to its own direct customers and also to users of second-hand IBM machines. But it will only provide a plug-compatible processor user with the individual program products and system control program. Generation of a full working system is left either to the user himself or to the PCM processor vendor. The latter can supply the user with software for generating something equivalent to the IBM SIPO. But the time and effort involved would be saved if IBM were forced to change its policy.

The problem of SIPO generation is probably greater in Europe than in the US because users on this side of the Atlantic tend to use more up-to-date systems software.

An EEC victory could benefit suppliers of smaller plug compatible machines especially because their customers are often used to a high degree of "hand-holding" by IBM. Such suppliers include National Advanced Systems, Nixdorf and Olivetti Computers.

Council links Philips systems to SNA net

GREATER Manchester County Council is to link eight Philips P7000 distributed processing systems into its 4341-based SNA network. They will co-exist with IBM 8100s.

With hardware built in the US by Four Phase of California, the P7000 can be supplied with software to make it look like an ICL 3270 Model I2 interactive terminal or 3770 batch terminal system. The software provides the Function Identifier required by SNA.

Supplied by the Data Processing Division of Philips Business Systems the P7000s will be used locally and remotely for concurrent data entry, validation and inquiries. Cobol program development facilities will also be used.

Philips says the council is also considering using the P7000 shared logic word processing package, Editor (CW, July 3, 1980).

Philips took over the marketing of Four Phase equipment in the UK, including the P7000, in 1979 (CW, July 26, 1979). There are now more than 50 P7000 systems installed here, about 30 being linked to IBM mainframes.

Several IBM users with existing or planned SNA networks have installed Syfa systems from Computer Automation as a direct alternative to IBM 8100s.

New skills in engineering

WITH the media-dominated by factory closures and the "microchip" seen as an even greater threat to employment than Tory economic policies, a conference on how computers will create new skill opportunities in the engineering industry could be a welcome relief.

The British Computer Society's Computers and Employment Specialist Group is holding a meeting on this subject on January 26 in London, and anyone is welcome.

Called New Skills in the Engineering Industry – the Impact of Computers and Microelectronics, it is organised by the Employment Specialist Group's chairman, Malcolm Peltu.

Invited speakers include Peter Senker and Erik Arnold of Sussex University's Science Policy Research Unit who will discuss their research into the impact of new technology on skills in mechanical and electrical engineering activities.

Jim Dick of the Engineering Industry Training Board will examine how national training and educational systems should respond to rapidly changing technological needs.

Venue for the meeting is the Bowater Conference Centre near Knightsbridge Tube Station. It starts at 2.00 pm, and doors open at 1.30 pm. The entrance charge on the door is £3.

More details about the meeting are available from Malcolm Peltu on 01-995 1548.

Paul Basson, managing director of Computer Modelling Ltd. . . . "Best in price/performance terms."

Financial planning system based on MicroNova

COMPUTER Modelling Ltd, one of over 100 UK Data General OEMs, has brought out a financial planning system for £16,000. Based on DG's MicroNova processor, the software is pitched at management in industry and commerce.

CML's managing director Paul Basson claims to have spent nine months benchmarking hardware from manufacturers including Computer Automation, Digico and DEC.

Although he says the DG kit is "not the fastest and not the cheapest" he judged it the best in price/performance terms.

The £16,000 purchase price includes CML software, training and back-up and the basic system comprises MP100 MicroNova with 64K-bytes, a 12.5-megabyte Winchester disc drive, a 1.2-megabyte floppy disc drive, an LP2 180 character per second printer with graphics capability and a VDU with programmable function keys.

First UK customer for add-in memory

THE Stock Exchange has become the first UK customer for non-IBM add-in memory for its IBM 3031.

Add-in memory differs from add-on memory in that it occupies the same slots in the machine as the IBM-supplied memory boards and requires no external power supplies, cables or boxes.

The Stock Exchange's two-megabyte memory expansion, costing £24,000, was made by Cambex in the US and supplied by PCML of Cobham, Surrey.

Based on 16K, 32K or 64K-byte dynamic RAM chips, the memory boards are transferable between computer models from 370/158 to 3033 and un many they allow double the memory capacity to be configured.

Telecom order

BRITISH Telecom has announced that 300 System X telephone sets will be installed in Coventry's public call boxes over the next two years.

An IBM display for non-IBM computers.

IBM have just produced a new VDU that will connect to most computers. Because it's ASCII Teletype compatible.

The first thing you'll note about it is the startlingly crisp definition of its screen.

It should also please everyone using the VDU, because the screen tilts and swivels for comfortable viewing.

There are dished keys for fast touch-typing; in fact the excellence of the whole keyboard design is a direct result of IBM's typewriter skills.

Not only is the terminal easy to use–but it's easy to set up.

Less than 30 minutes from unpacking to running.

It has the quality you'd expect from IBM.

But no VDU from IBM's Data Processing Division has ever been sold for as little as this.

Buy it in quantity, and you may pay even less.

The IBM 3101 is now available through distributors.

Ask us for details.

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Please send me more information about the new IBM 3101 VDU, and where it may be obtained.
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Choice of communication interfaces. Switch selectable line speeds. Modular design for ease of maintenance. Swivel/tilt screen and tilt for user comfort. Screen antiglare filter. With 25th line for operator instructions. Available in 128 ASCII or UK standard. Communications speed to comply with 3 Mile Island requirements. Many advanced functions that can increase productivity.

Downtime

by Chad

Getting micro message home — with no strings

THE gentleman in my picture is not fiddling with one of the props from "The Empire Strikes Back". This is a design for an electronic stringless guitar that is on show at the Design Centre in Haymarket as part of the new Microelectronics Come Home exhibition.

The instrument, called a Syntar, was designed by Mark Morrison of North Staffordshire Polytechnic, several of whose colleagues have also indulged in this touching practice of building mock-ups of wondrous electronic machines before they have discovered how to make them work, a habit I call writing out the postcards you're going to send back from Betelgeuse. There was even a cardboard robot vacuum cleaner that would (they hope) have a magical device to stop it from running over the cat.

Considering how uninspired was the Design Council's last microchip exhibition (on office machines) I didn't expect much from this one, intended to show the forthcoming impact of electronics on people in their lives away from work. There were the expected micro-controlled washing machines and central heating controllers in between exhibits of rather excessive whimsy.

In addition to the cardboard musical instrument were bits of flashing jewellery, a door bell that played tunes from a repertoire of several dozen, and a model train controller that appeared to do nothing at all. There was just one train that went round and round, getting gradually slower as it became tired.

There was also a computer for hookies, an elaborate chess-playing machine designed by International Master David Levy, and a car computer from Smith's Industries that told you your instantaneous fuel consumption. With this you can spend all your time staring at the readout and adjusting your speed for greatest economy, so you won't have to be distracted by looking at the road at all.

This prototype guitar without strings is a Syntar, designed by Mark Morrison of North Staffordshire Polytechnic. It is on show at the Microelectronics Come Home exhibition.

One of the great ideas men of our age

IT was sad to hear of the death of Marshall McLuhan, one of the most interesting of our age's ideas men. He is best known now for his appearance in Annie Hall, when Woody Allen leads him on to the screen to deflate a pseud in a cinema queue who has been dropping his name.

In the Sixties when he first rose in fame he was chiefly noted for the obscurity of his ideas, the butt of many a cartoon in the New Yorker magazine along the lines of "I'm terribly proud of my son — he understands Marshall McLuhan".

Long before our present preoccupation with technical change McLuhan was proclaiming that the world would be transformed by electronics. Unlike many pundits today, he actually analysed this thesis, and came up with reasons why differences in media should have so much effect.

It is by no means certain that he was right, but at least his analyses were stimulating.

His characterisations of media as "hot" or "cool" (radio is hot while television is cool) were not only generalisations, but difficult to interpret or extend. Whether viewdata is a hot or cold medium I have no idea.

It is ironic that someone who devoted his whole life to the theory of communication should have so much difficulty in communicating. Still, it is an irony which McLuhan, with his sense of humour and gift for self-mocking, would have appreciated.

"Cool man . . ."

NEWS IN BRIEF

Univac ousts ICL at Rediffusion

A UNIVAC 1100/61 is replacing two ICL machines, a 1903A and a 1901T, at the Rediffusion Group. The 1100/61 will handle all data processing for the TV rental firm with program conversion carried out at Univac's Paddington, London, conversion centre.

A subscribers' accounting system will be written jointly by Univac and Rediffusion for the 1100/61.

The X factor

LINE transmission and multiplexing equipment worth £11 million has been ordered by British Telecom from GEC Telecommunications for delivery during 1981. The equipment will be made at Coventry and includes both analogue and digital systems.

Satellite galaxy

APPROVAL has been given by the US Federal Communications Commission for the construction of 25 and the launch of 20 domestic communications satellites. Three newcomers, Southern Pacific, Hughes and GTE Spacenet, were included in the award, although overall established operators with proven traffic demand were favoured. These included RCA, Western Union, Comsat General, SBS, AT&T and ITT.

Video briefings

DELTAK, publisher of video based training and information programs, has set up a service providing video briefings for managers and executives who are trying to devise new strategies to cope with the explosion of information in today's business environment.

Technology forum

A NATIONAL forum to close industry's approach to technology is being advocated by Dr Greg Bamber, of Durham University business school in its Industrial Relations Journal. The forum would consist of government, industry and trade unions, and would be funded jointly by the three sides.

CTL division

THE all-British computer company CTL has established as its Applied Systems Division which will be responsible for the design of hardware and systems software and the development of applications software for CTL computers. The new division is headed by Ian Gostes, formerly of Software Sciences.

Apple service

SERVICE of Apple computers throughout the US is to be taken on by Bell & Howell. The troubleshooting and full warranty repair service is to be provided by the company's service organisation which is to be expanded for the task. No similar operation is planned for the UK by Bell & Howell.

GILB'S MYTHODOLOGY

Motivation by competition

Tom Gilb is an independent consultant, lecturer and author on computing topics.

ONE of the fundamental reasons for over-complex designs today is lack of real competition for the designer.

Our designers are not encouraged to stretch their imagination and to increase their professional competence. Why should they? Their design suggestions will be accepted, and will function reasonably well. At least it will take years of both project implementation and operation before critical weaknesses are discovered.

We have a lot to learn from the building architecture competition model. Sn why don't we put all our important design projects out to open competition from the many consultants and computer service and hardware suppliers?

If they are as good as they claim to be, designers should have no objection to presenting their best total design solutions as their own cost, and being judged and presented (if they win one of the major prizes) in public.

First prize-winners will be awarded contracts for the detailed architecture and the follow-up of the implementation. Second, third and other top places will get cash awards and we will make use of some of their best ideas.

The competition principle and the simplification goal can be applied to any one or many of the system attributes: for example, we can ask to simplify the uncertain elements of cost, time to performance.

We can ask for a reduction in the number of new and untested components, or of unstable components (such as software packages) in the updating menus of a typically often-changing commercial system.

It is essential, when asking for such competitive design architectures, that we state only the really critical design goals and that we do not constrain the designers to any particular architecture.

In one recent large-scale architecture simplification exercise, I was faced with the implicit assumption that the solution had to be in terms of the present large-scale computer system and its database management software.

The final architectural solutions were great simplifications and attacked the ultimate goal rather directly.

The new system architecture consciously avoided the large-scale systems in favour of smaller hardware increments. It bypassed "database" in favour of concentrating on the area of greatest employee impact (data entry).

Policy

Let me try to make this issue even more concrete by suggesting some policy ideas. Compare with your present policy.

1. All major (over one work year) projects shall be designed with major architecture exploration by means of open competition.

2. At least one independent architect shall be considered.

3. At least three architectural alternatives shall be hidden.

4. The competition shall be announced by public trade Press announcement (if necessary, using outside consultants as confidential intermediaries).

5. The company shall retain the right to use all ideas submitted in any combination.

6. We shall retain the right to share all submitted designs in part, or publish in combination with any bidding consultants we wish to employ.

7. The best three designs shall be given cash awards and public recognition.

8. Judges shall be personally, organisationally and economically independent of any competitors.

9. The first prize-winner shall be offered the opportunity to rework the final architecture according to revised company directives and in the light of other ideas from other competitors.

I don't think many readers have the moral or professional courage to throw their architectures into open competitions like this and I can hear the long list of reasons why not, even as I type these words.

Perhaps some of the more timid would consider trying out the idea by at least arranging an in-house competition, just to get the feel of it.

Insecure

I can promise you the results in advance. If you are trying halfway. Some of the designs (which you would not have known about) will be at least twice as good, measured on at least one interesting attribute, as the "original". Some designs will be an order of magnitude better than your original idea.

Of course, there are those insecure designers who know that they are incompetent and they will not encourage or join in such competition. This is an issue which management must control — not designers.

Gilb's hypothesis: If you make use of design architecture competition you will improve your results more than by any other form of optimisation or simplification. If you don't use competition, you will never know you are missing it.

FOCUS

Language of communication

RELIABLE forecasts suggest that communications could be the theme of 1981. Getting it together in datacom terms involves interfacing Prestel with Ethernet, Euronet with the Cambridge Ring and most probably the DPM with the latest Plessey Glossary of Telecommunications.

For many DP managers, communications is typically a matter of speaking down the telephone, shouting down the corridor or remonstrating with the site engineers.

DPMs are less likely to be involved in COM2 voice concentrators, telenet links and British Telecom tariff rates than in a ready-supply of inter-departmental memo pads and ready access to the office telex machine.

Anyone — and increasingly that looks like being all of us in computing — getting involved in datacom will first have to learn the language.

The language of communication is limited to acronyms, numerics and cryptic names of girls. Rebecca, Katherines and Monicas stand little chance in competition with Anne, Diane, Sue.

At the Telecommunications Managers' Conference late last year, the world appeared as little more than a network of telecom lines, channels, PABXs and message-switching stations.

The rapid development of low-cost electronics, fast transmission rates and economical PTT costs has encouraged the industry to market an increasing array of data communication products, modems and related software.

On the customer side, there is a growing need to keep up with if not overtake the opposition in the information processing stakes.

British Telecom has got the communication message already. Mail and telecommunications are now separate organisations, the postmen obviously believing that competing with cable network timescales is both unfair and impractical.

In turn, it seems the days of the cable are numbered. Fibre optic technology is now all the telecom rage along with wide-band channels.

It is unclear where all this technology will leave the DPM. Certainly, a lot of education and training will be needed in the not-too-distant future.

Information technology will not be able to escape the communication link, whether private or public networks are used.

Nor will the DPM escape contact with such thorny areas as cross-border data flows, electronic fund transfer and the ubiquitous System X.

The problem posed is: Where does the DP team look for its datacom training? Not to the State of The Art conferences and seminars. A do-it-yourself approach to datacom is infeasible. Learning the necessary skills will require on-site training or attending practical telecom courses and workshops.

TEN YEARS AGO

From Computer Weekly of January 14, 1971

BRITISH Overseas Airways Corporation (BOAC) is one of four major international airlines whose withdrawal means the end of plans to implement the proposed SITA-ITT joint ticket reservation scheme announced at the end of last year. BOAC is joined by Lufthansa of West Germany, Air France and Alitalia. . . Lord Crohner has been replaced by Jacques Maisonrouge as chairman of IBM Holdings Ltd. Lord Cromer is the new British Ambassador to Washington and 47-year-old Maisonrouge, previously president of IBM World Trade Corp and a vice-president of International Business Machines Corporation, has been on the US board since 1964. . . Computer personnel are suffering from the twin effects of low salary increases and rising inflation, according to Management Selection Ltd, who report that DP/MIS between 21 and 30 can earn only £20-£100 per year and year.

Planning a night to remember are (standing): Rupert Bayfield and David Bennell; (seated): John Brown and Iain Holden. Bayfield joined De La Rue Bull from ICI in 1961 as an operator and progressed to become manager of Honeywell's Software Services Department. He is co-founder of the VLI group. Bennell, as personnel officer with De La Rue Bull, 1961-65, was instrumental in recruiting the key new staff of that period, and is now London regional manager of MSL, an executive selection consultancy. Brown started at De La Rue Bull in 1961 as a programmer, leaving in 1967 to join ICL, where he is now employed in a senior role. Holden was assistant manager of the Technical Services Department of De La Rue Bull in the early Sixties, and is now European database manager for Honeywell Controls.

Double demand for non-impact printers predicted for 1985

WORLDWIDE demand for non-impact printers will more than double between now and 1985 by which time international shipments will be worth $2,700 million.

Over the same period, shipments in the US of printers costing $1,000 or less will jump from just over $100 million to more than $300 million.

These predictions feature in reports* from two US consultancies, Strategic Business Services and Creative Strategies International. The two firms are unrelated, though they are very near neighbours in San Jose, California.

SBS' study an non-impact printers analyses the future of seven technologies — electrophatagraphic, thermal, ink jet, dielectric and plsin psper electrostatic, electrosensitive discberge, electrolytic and magnetic.

The electrophutographic embraces high performance/high cost laser printers of the type manufactured by IBM, Siemens and Xerox. SBS predicts that prices of these units will tumble to as little as $25,000 and that annual sales will jump from 160 units in 1979 to 16,000 in 1985.

Two-fold increase

The report envisages their use by the mid-80s in large word processing installations and distributed processing applications as well as in large data processing sites. Shipments will be worth $600 million in 1985.

Dielectric printers, like the Honeywell high speed Page Printing System and smaller units built by Houston Instruments, will experience a more than two-fold increase in shipments, from $95 million to $205 million.

Thermal printer shipments will grow at a rate of 8% a year to a level of $500 million by 1985. Main application areas will be personal and small business computers.

The Creative Strategies report on low-cost printers covers both non-impact and impact units that print at least 40 columns and cost $1,000 or less.

US shipments by value of non-impact printers, all employing matrix technology, will grow at 15.5% a year compound between now and 1985 by which time they will stand at $38 million. In contrast, impact units will experience a 25% growth rate to reach a level of $264 million by 1985.

About $200 million of that total will represent dot matrix printers in the 80-120 chps speed range. More than 300,000 of these units will be shipped in four years' time.

*Non-Impact Markets and Technologies for distributed Printing. 120pp. $950. Strategic Business Services Inc, 4320 Stevens Creek Blvd, Suite 215, San Jose, California 95129, USA. Tel: 0101/408/243-8121.

Low-Cost Computer Printers. 83pp.$1195. Creative Strategies International, 4340 Stevens Creek Blvd, Suite 275, San Jose, California 95129, USA.– Tel: 0101/408/249/7550.

Twenty years on — Swanning with the De La Rue Bullians

THE four men in the top-of-page picture have been plotting to make Friday, January 30 s night to remember. And if you worked for De La Rue Bull and have not yet been fished into their nostalgia net, you should turn up at The Swan, off Southampton Row in London, where you will find what has happened to the old gang, 20 years on.

The date commemorates the 20 years since two of this particular Gang of Four joined De La Rue Bull as trainee programmers. About ten years ago, Iain Holden and John Brown decided they would like to celebrate the anniversary of their initiation at the same pub they frequented in the De La Rue Bull heydays.

Abetted by former personnel manager at the company, David Bennell, and Rupert Bayfield, who had originally joined as an operator, they rounded up some of their former colleagues for what has now become an annual event.

The story of De La Rue Bull goes back further than the Holden/Brown anniversary. It was in July 1959 that the first five staff were sent to Paris for a training course.

The company was formed as a combined operation between the British company De La Rue, famous more for printing rather than computing expertise, and the French Bull Machines. It was a marriage of convenience, because De La Rue was looking to expand into a high technology industry and Bull wanted a UK outlet for its computers.

The product line was a bit diverse, with tabulators, calculators and a range of various computers, including the Gamma 30, based on the RCA 301 that was also the source for the ICT 1500 series, and the large Gamma 60 which Holden describes as one of the first multiprocessors on the market.

De La Rue Bull became part of successively larger groups, but the close company spirit remained intact. In 1964 the company became a part of the US GE group under the name GEIS and in 1970 GE and Honeywell merged their computing interests.

De La Rue Bull's headquarters is now Honeywell's Southampton Row offices — hence the close connection with The Swan around the corner.

A host of computing familiaries emerged from De La Rue Bull and are now working in senior positions in many companies. Of the Gang of Four, Bennell is a senior executive with MSL management consultants, Bayfield is managing director of the VLI group of computer services companies, Holden is European database manager for Honeywell Controls, and Brown has a senior position with ICL in Bracknell.

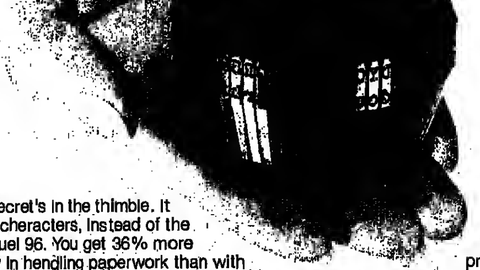
The first five who joined De La Rue Bull in 1959 have all moved on: Brian Higgins to Calcomp, Malcolm Wates to PA, Ron Cook with GEISCO, Derek Price with Comshare in Canada and Graham Thorne, still within the family, with Honeywell.

One of the highest climbers has been Ian McNaught-Davis, managing director of Comshare (and well-known mountaineer).

For future events, old De La Rue Bullians can contact David Bennell at MSL, 52 Grosvenor Gardens, SW1W 0AW. Tel: 01-730 0255.

RUPERT BAYFIELD, now group managing director of VLI, joined De La Rue Bull in 1961 from ICI as an operator, said this photograph was taken in the Sixties for a De La Rue Bull brochure. Bayfield is operating a Gamma 30, which was basically the RCA 301 that was also marketed by ICT as the 1600 series.

You have every reason in the world to switch to NEC's "thimble" printers. There are 128 of them.



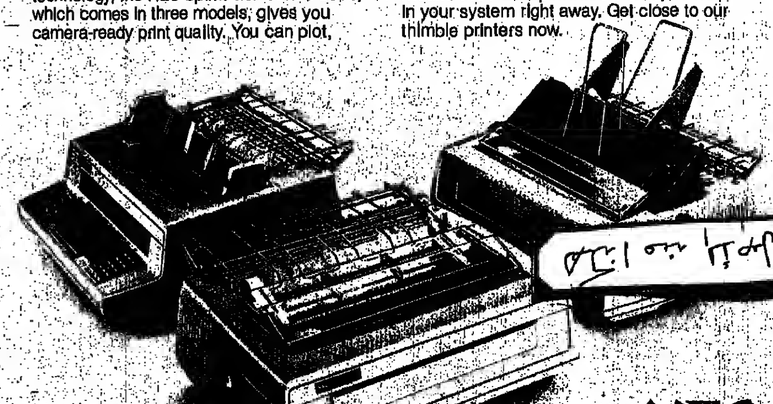
The secret's in the thimble. It has 128 characters, instead of the more usual 96. You get 36% more flexibility in handling paperwork than with most of the daisy-wheel and golf-ball print elements of other printers. In English, French, German, Scandinavian, name it. And one thimble will last more than 30 million clear impressions. Quietly, quickly.

And that's just for openers.

Thanks to our own LSI and microprocessor technology, the NEC Spinwriter Series 5500, which comes in three models, gives you camera-ready print quality. You can plot, graph, superscript, subscript. Tab horizontally or vertically. And print bidirectionally.

Changing thimbles and ribbons is a snap.

Also, system modularity means your Series 5500 printer will grow as your requirements grow. And one of the nicest things about it all is that it really won't cost you a thing to switch. 7 interface capabilities, including those for Diablo, QUME and Centronics, means the NEC Spinwriter is ready to work in your system right away. Get close to our thimble printers now.



NEC

Nippon Electric Co Ltd

Tokyo, Japan

For more information, please contact NEC Telecommunications Europe Ltd., NEC House, 1 St. Katharine's Way, London E1W 1UT. Tel: 01-481 4411. Telex: 887787. Thame Systems Ltd: Thame Park Industrial Estate, Thame, Oxon OX9 3RR. Tel: Thame (0844) 213771. Telex: 837344.

Arthur Carr (right), president of Codex, discusses the deal with Paul Rosenbaum, vice-president.

Codex buys its UK distributor for £1million

by Donald Kennett

GROWING investment needs at Croydon-based Cole Electronics have persuaded parent company R. H. Cole to sell off the data products division to its major supplier, the US company Codex.

On completion of the £1 million cash deal last week, R. H. Cole chairman Dr Jack Barrett said his company had initiated the sale because the data products division's demands for working capital had threatened to inhibit the development of other parts of the group.

Codex, which claims to be the world's largest independent supplier of data communication equipment, is a subsidiary of Motorola. Its president, Arthur Carr, with vice-presidents Paul Rosenbaum and Jim Storey, join the board of the UK company, now renamed Codex UK.

Managing director Rodney Turvey and commercial director Derek Surry remain with Codex UK.

Codex products already account for 90% of the company's sales, but some componeot sub-assemblies and transmissiop equipment will continue to come from the remaining part of Cole Electronics and patching and test equipment from Dynatech, Digilog, International Data Sciences and Bradley Telecommunications in the US.

Data Products Division sales grew an average 37% n year to £3 million between 1977 and 1979, the last year for which figures are available, while profits reached £405,000. Codex grew at over 40% a year in the same period, following several years' growth at 60% a year, but its actual sales and profit figures are not available because they are merged with Motorola's.

Carr said: "We expect to outpace the general growth of our markets as we have in the past."

Rapid growth

One third of Codex sales are outside the US, and European dealers are supported from Brussels. There are no current plans for further takeovers, although since Motorola acquired Codex in 1977, Codex has bought companies in Toronto, Canada, and Huntsville, Alabama, and set up a further company in Phoenix, Arizona.

The acquisitions have brought feedback to Motorola from new markets and have already resulted in custom VLSI devices being produced for modems. Motorola and Codex see themselves as being in the information transport business, which they expect to grow rapidly in the 1980s, and are aiming for leadership in the market on a broad front, rather than concentrating on a specialised segment, which could be done with far smaller investment.

Information tranaport would cumpetc effectively with pnoe transport as energy costs rose.

Viewdata does not form part o this plan, although Carr sa viewdata and similar informa processing systems would spre widely as they grew cheaper.

A recent report from Stanfo Planning Institute of Boston su gested that vertical integration, example by a manufacturer buy its distributors, was only a g idea when the market was unde growing nor shrinking.

Carr reacted by saying vertic integration was unstable in any v vironment. There were always d ficulties, with differences betwe people, cultures, technology a processes, but Motorola 'was goo at it and had had very little trouble after any of its acquisitions.

Networks

Turvey said he expected t greatest market growth to be i private company networks – li the one his company was to laun for the Trustee Savings Ban linking over 1,000 branches u using Codex network contr equipment, switching equipme and modems worth £2 million.

Other banks, insurance com panies and commercial organisa tions generally were likely to set u similar networks in subsequ numbers over the next four or fi years. Codex had recently launched a major range of in grated communications produ based on on advanced communica tions processor to cater for th market, although smaller co panies would continue to provi Codex's bread and butter.

Centre-file into second stage of real time share project

CENTRE-FILE, the specialised bureau subsidiary of Natwest Bank has implemented the second stage of its massive real time share portfolio valuation project.

The overall project, launched in 1978 and scheduled for completion in 1985, is one of the biggest systems being developed in the City of London.

Out of a total systems and programming staff of 150 the bureau has committed nearly one-third to the project, which is estimated to need over 600,000 lines of coding to complete.

Centre-file, which recently lost the last of its sales force, has indicated that it is happy to retain its existing customer base until the system is fully converted.

But informed commentators see a loss of interest by Natwest in this segment of the market which, though highly lucrative, is savagely competitive.

Centre-file operates two big IBM machines, a 3031 and a 3032, currently under Total and VSAM to service about 50% of the broking market. The current project is aimed at retaining the IBM machines but switching the software to a DB/BC root-only version of IMS.

The conversion timescale straddles the period in which the first of the VLSI-based processors on a chip will be delivered.

● Centre-file backs NMW – see page 9.

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Overseas enquiries: Racal-Milgo Limited, Richmond Road, Kingston upon Thames, England. Tel: (01) 541 2211

RACAL

Service for buyers holds information on 15 million products

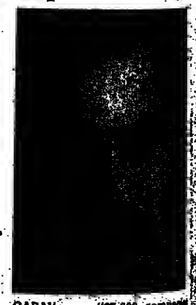
AN online information retrieval service for buyers in industry has been set up in London with financial backing from the Department of Industry. The File of Industrial Data (FIND) is claimed already to contain information on 15,000,000 products and components of interest to manufacturers, and uses a software package that has been designed for the purpose from scratch.

FIND is intended mainly for telephone enquirers, buyers in industrial firms who need help in finding products. No consumer products are included.

Teams of operators answer the phone and obtain the needed information on a VDU linked to a dedicated CMC Reality system. Users who want to access the data directly with their own dial-up terminals can do so.

Enquirers pay nothing for the information, but their names and addresses are passed on to the firms supplying the data, who pay a basic charge of £750 a year for which they can load 250 of their products into the index. Extra products are charged at between £1 and £2 each.

The Reality, which currently has 100 megabytes of disc, was chosen for its operating system,



GABAY . . . "25,000 companies are already supplying data"

particularly suited for database work. The retrieval package was designed and implemented solely by managing director Raphael Gabay and his staff, using Basic.

According to Gabay, 25,000 companies are already supplying data to FIND, which has been running on a trial basis since September. These firms include ICI, GEC, and Kleinjet many are at present getting a free trial.

New idea in DP insurance

NOVEL insurance cover against the devastating effects of fire, flood and explosion on a company's data processing centre has been made available through a new company, Recovery Operation Centres.

ROC will erect a temporary computer centre at any company hit by disaster for premiums ranging from £2,000 a year.

The centres would normally be erected in any open space, within five days and they come equipped with electrics, fire protection systems, environmental control equipment, and security access control. In addition, ROC guarantees to provide temporary power and telecommunication lines.

Two sizes of building are available, a 1,570 square foot unit (£1,950 p.a.) and a 2,640 sq ft installation at £2,950.

OLIVETTI BUSINESS LAUNCH

ADDING to its Business Computer Systems range, Olivetti has introduced the BCS 2000 Video series, the first two members being the BCS 2030 VF and the 2025, which is shown here. Both models come with a full sized VDU and two megabytes of storage capacity on double density floppy disc drives. The 2025 is equipped with a 13-inch carriage and a 60 chps printer while the 2030 VF comes with an 18-inch carriage and a bi-directional printer that runs at 100 chps.

The BCS 2000 will complement rather than replace the existing BCS 2000 family and will run Olivetti's Opol range of applications packages.

French PO and travel agents to devise joint DP system

FRANCE'S national syndicate of travel agents, SNAV, has joined forces with the French Post Office's telecommunications department and its subsidiary Servitel to devise a data processing system for its members.

Foreign countries will be asked to co-operate in defining a system compatible with those being introduced abroad.

Jean-Marie Stracuzzi, the SNAV official responsible for the project, says it will increase tour operators' sales of holiday packages, speed and boost bookings, reduce administrative work and provide detailed statistics required for sales strategy.

SNAV had earlier shown interest in a system devised by Servitel and known as STT, or inurism data processing service. But the travel agents' computer working group ruled against STT, on the grounds that it was already obsolete.

The French travel agents hope a new system will be operative within two years. Meanwhile they are asking Air France and French railways for more terminals in order to handle travel bookings.

SNAV has also asked Industry Minister Andre Giraud to set up a databank of travel information which will give members immediate access to material now available only by lengthy consultation of brochures and timetables.

Cable TV gives US a boost in Prestel race

TWO experiments in online information services for consumers at home, based in Columbus, Ohio, look like giving the US another boost in its race to catch up with Britain's Prestel.

The users in Columbus have given enthusiastic receptions to one online service that uses their cable television system rather than the telephone, and to another that has provided access to a wide range of home information including an entire encyclopaedia.

The use of spare channels on a television cable for information services is attractive because of the higher speed and better graphics involved, and the elimination of telephone charges.

Richard Boker of Compuserve, the bureau that is providing the computing service, explained in Computer Weekly: "We are of the strong opinion that cable will play a major role in the delivery of information to the home."

Joining Compuserve in the experiment, which has just started operation with 10 users, are Qube, the cable TV service that already provides audience response keys for its viewers (CW, August 10, 1978) and Atari, which is supplying the terminals. The users have access to Compuserve's hobbyists' information service, providing news, stock market and sports reports, recipes, electronic mail, and a shop-at-home service (CW, July 24, 1980).

The one part of the Compuserve database not available via Qube is the Columbus Dispatch newspaper-on-line. Negotiations are still going on as to how Qube's and the Dispatch's competing interests in advertising and shop-at-home can be reconciled.

The other experiment in Columbus, which has just finished, is a viewdata service provided by OCLC, the Ohio College Library online system. In what was originally called the Channel 2000 experiment, 200 homes were provided with specially-designed decoders for their televisions through which they could access information on entertainment and coming events, financial advice from a bank, a public library catalogue, and the full text of 30,000 articles from the academic American Encyclopaedia.

"We were surprised by the good response from the users," Tom Harnish of OCLC told Computer Weekly. As a result the firm is looking for ways of setting up a full-scale money-making service, under the name of Viewtel. Testing has been going on for a way to add audio information to the viewdata signal. Harnish explains that this could enable them to play a Bach fugue to the user who he looks up an article on the computer, or for information-seeking a human operator could give help by voice.

The decoders were designed from scratch because no existing technology seemed suitable. The UK supplier Insac was consulted but showed no interest in home applications, Harnish said. Insac has always said it wanted to concentrate on business use of viewdata. Each decoder has 10K of memory.

Chinese mini on show

A RARE insight into Chinese computer technology was provided by the National Exhibition of the People's Republic of China, which toured a number of cities in the US between September and December of last year. On display were several of the most popular Chinese-built computers, peripheral devices and magnetic tape and paper tape drives.

One of the major exhibits was the DJS-131 general purpose minicomputer, which is believed to be widely used throughout China for process control, data communications and scientific calculation.

The mini's rated speed is 500,000 operations a second as measured by a standard instructions mix, and a basic system without a disc or tape drive costs about 200,000 yuan. This is equivalent to about $130,000 – an extremely high price to the Chinese end users. But the Chinese computer manufacturers expect that with the introduction of higher levels of integration and improvements of manufacturing technology the prices of their computers will continue to decline.

According to the Chinese technicians, who accompanied the exhibit, the DJS-131 mini is already an eight-year-old design but it is still in production because the Chinese maintain 10-year hardware manufacturing cycles. Nevertheless the DJS-131 series is being phased out and is expected to be replaced by some of the DJS-200 series of computers that are comparable to the IBM 360 machines.

The Shanghai Electronic Computer Factory which produces the DJS-131 also manufactures the more advanced DJS-220 computer and the TQ-16 and the TQ-6, a large machine rated at 1,000,000 operations per second.

Under the new joint-venture laws being promulgated in China, the Shanghai factory is drawing plans to enter into licensing and compensation trade agreements with Western manufacturers. The management is eager to obtain Western technology to produce more advanced hardware for use in China as well as for export to foreign countries, and Western manufacturers who are interested in such co-operation should contact Chou Pinxien, the director of the plant.

The DJS-131 computer uses TTL integrated circuits in the small scale integration (SSI) category with less than 100 gates per chip. As a result considerable interest centres on development of MSI and particularly LSI components for use with future Chinese computers assembled at this location.

The central processor of the DJS-131 is a 16-bit word machine with a magnetic core memory and a two-microsecond cycle time. The memory is expandable to a maximum of 32K words in 4K modules.

Banks plan online credit card by 1982

LOCAL BANKS at Saint-Etienne, Central France, are planning a 1982 launch for an online credit card which can be used at 200 point-of-sale terminals.

A limited experiment of online payment has been operating for the past two years at Bourg-en-Bresse, a prosperous farming centre between Lyon and Geneva. The originators, the Banque Regionale de L'Ain, say 60 per cent of its cheque holders now carry online cards.

Although it costs £2,000 to install each point-of-sale terminal, the system represents an enormous saving in processing cheques, each of which costs the bank 50 pence.

France's next problem looks like being how to make online and offline cards compatible with two different payment networks.

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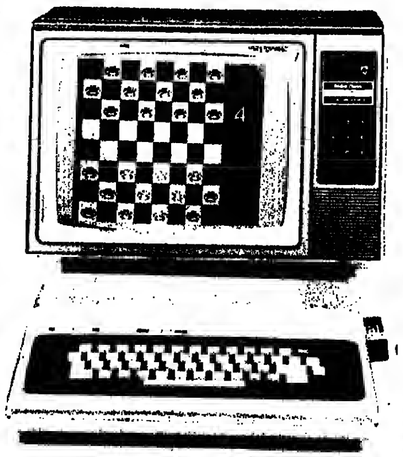
MICRO NEWS

by Eileen Stainer

Stay-home banking in Tennessee



Tandy's colour computer, which is being used by the United American Bank in Tennessee for a home banking scheme.

HOME banking has become a reality in the US. Customers of the United American Bank in Knoxville, Tennessee, can use a Tandy TRS-80 colour computer for $15 to $25 a month to utilise services at their local bank.

The Express Information home banking service is a joint venture of the United American Service Corp, Tandy and ComuServe. About 400 customers have had the facility since October last year but the program will be expanded throughout 1981.

Express Information includes a standard keyboard and simply plugs into the customer's television set and telephone.

Among the facilities available are a news and financial advisory service, payment of bills, access to current information on the customer's account, a bookkeeping service and a loan application service.

Movement on the 256K dRAM front

IT was a stunning enough announcement in February last year, that NEC-Toshibs and NTT had introduced experimental wafer versions of the 256K dynamic RAM. Struggles were still going on with the development of a working 64K dynamic RAM.

Now Toshiba seems to have won the 256K race with the almost unbelievable news that it expects to be in volume production with the device just two years later, in February 1982.

Warning

It was snoounced at the 1980 International Solid State Circuit Conference held in San Francisco, and at the same event Fred Bucy, president of Texas Instruments, warned that Japan might take the lead in microelectronics from the US during the 80s (CW, February 29, 1980). Both NEC-Toshiba Information Systems and NTT's Musashino Electrical Communication Laborstory are wholly Japanese companies.

Even though Japan has won the race, the 256K market, small as it may be at the moment, is not completely Japanese. Apart from the three companies mentioned, one other has just announced its plans and developments in the area: Siemens of Germany. In the US, Motorola hopes to sample a 256K device using HMOS II in 1982 with production two years later (CW, July 10, 1980).

The question of need and demand for 256K RAMs in the systems industry must be considered. This same industry does not seem to be falling head-over-heels for the 64K RAM, which has become available over the last year from various semiconductor manufacturers.

Preference is still given to the 16K dynamic RAM, of which the standard is the Mostek part, because of cost, availability, standardisation and incentive. The 64K RAM is available in small quantities only for $60-90 apiece, whereas the 16K costs $2-3 a piece.

Redundancy

Several industry sources claim that Motorola is the winner of the 64K dRAM race, although Texas Instruments was one of the first companies to announce its development, two years prior to availability. Others in the market include National Semiconductor, Fairchild, Mostek, ITT, Siemens, the Japanese companies, those already mentioned, the Hitachi and Fujitsu, and of course, Intel.

Intel's was the latest to be announced and its design involves redundancy which improves on the weak point of 64K RAM production-yield. Until now, bad yield has limited the availability of the 64K device, which explains the lack of incentive of systems companies to design with 64Ks rather than 16Ks.

Electronics industry analyst Ben Rosen believes that Intel will set a trend in the industry with its use of redundancy, and feels that its chip may perhaps become a standard (although that is what Inmos director Paul Schroeder is hoping will happen with Inmos' 64K dynamic RAM which is expected on the market in June).

Siemens, a company that is working closely with Intel in its latest Microsystems 80 project developing a 32-bit chip set microprocessor, has employed redundancy in the design of its 256K RAM in an exciting way.

The redundant bits are accessible to the designer to enable him to improve his design methods and to the user to improve circuit performance. The main disadvantage of the chip, as confirmed by Siemens, is its high power consumption.

Exciting

According to Siemens, both NEC-Toshiba and NTT have produced 256K chips which appear to be more like multiple 64K RAMs. Unlike Siemens' device, however, they do offer options for output improvement.

Siemens' chip has another exciting feature. Starting from one special pin on the 18-pin package, it is possible to have a standard 16-pin configuration. One pin is not connected and Siemens says it will be used in the future for one-megabit level integration.

NEC-Toshiba's chip has line dimensions of 1.6-microns achieved by the photolithographic method, but even with this in a 16-pin dual-in-line package the chip still measures around five by nine millimetres. It is compatible with existing 16K and 64K RAMs.

NTT's device uses one-micron geometry and electron beam writing. Based on a special molybdenum polysilicon technology it is more advanced than the NEC-Toshiba device, measuring around six square millimetres.

Hazard

NEC-Toshiba's chip has an access time of 160 nanoseconds and a cycle time of 350 nanoseconds, while NTT's has access and cycle times of 100 and 200 nanoseconds. Siemens' device has a cycle time of 40-80 nanoseconds.

Protective steps against alpha particle problems have been taken in the design of the Japanese devices. Alpha particles proved a hazard in the production of the 64K dynamic RAM because of the high densities.

One protective feature is that the memory cell capacitance is large enough for the soft error caused by one particle. Also, critical areas of digit lines are as small as possible and a coating is applied to the surface of the chip.

The NEC-Toshiba chip does not use redundancy because NEC has claimed it to be unnecessary. This could cause the two companies to lose the lead, if they do not get good yields.

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For advance exhibition tickets at £1 each, write to: Microsystems Tickets IPC Exhibitions Ltd, Surrey House, 1 Throwley Way, Sutton, Surrey SM1 4QQ.

Please note applications for tickets cannot be accepted after February 23, although tickets will be available at the door price £1. Cheques should be made payable in UK sterling to IPC Business Press Limited.

32-bit sample this quarter

THE first 32-bit microprocessor, Intel's iAPX 432, looks like appearing on the commercial market sometime this year. Initial samples are expected this quarter (CW, June 19, 1980).

The 432 will be a three-chip set consisting of an instruction decode unit, 43201; an execution unit, 43202; and an I/O interface unit. Its power is rated by Intel at 2 mips (millions of instructions per second), equivalent to the power of an IBM 370 system.

The incorporation of the kernel of an operating system in to the device itself means that each chip set can recognise the instructions intended for it and execute them, thus speeding up operation.

Memory management capability includes the mapping of a virtual memory space of 2^{40} bytes into a physical memory space of 2^{24} bytes. Intel claims that 32-bit additions and multiplications can be done in 0.4 and five microseconds respectively.

Translating Visicalc

COMMODORE International has been granted translation rights for the software accounting package Visicalc. The agreement lasts until the end of this year and enables Commodore to supply non-English speaking Western European countries with Personal Software's Visicalc package.

The program can be described as a programmable ledger sheet and will be available in German, French, Spanish, Italian, Dutch and Danish. It runs on Commodore (Pet and Vic), Apple, Hewlett-Packard and Tektronix microcomputer systems.

Intel price down

PRICES of Intel's 5.6MHz version of the 8748 ultra-violet programmable 8-bit microcomputer, has been reduced. Quantities of 100 or more are now £11 each.

COMPANY NEWS

CCF doubles turnover with brokers' package

CONSULTANTS (Computer and Financial), CCF, the City-based bureau and software house, will shortly announce turnover for the year just ended up to £500,000 from just under £240,000 the previous year.

Profits, according to managing director Tim Simon, will be about £100,000 (gross). The exceptional jump in turnover and profit has come primarily from a doubling in the number of systems installed by CCF, although the acquisition of the Payline computer bureau, recently announced, was also partly responsible.

The core of the company's success continues to be the stockbroking package Fiscal.

Fiscal is portable and will run on IBM (System 3 and 34), Ultimate (Honeywell Level 6), Prime and CMC Reality minis. It offers stockbrokers a complete control, accounting and ledger system with facilities for accepting input from the Stock Exchange's Talisman centralised bargain accounting and Chaps settlement system.

Portfolio valuation is achieved using Extel input and at the end of each day's processing a tape of data for input to the Talisman system at the Stock Exchange is created. The package gives small firms what amounts to a real time system for the daily activities of a stockbroker's office.

A number of city firms, including Northcote and Bone Fitzgerald, have signed up with CCF on a bureau basis. Northcote is expected to go in-house soon with the complete Fiscal software and hardware package.

Simon said that a complete system would be installed in a customer's office for about £90,000.

Although in its infancy the Fiscal package, which now includes an arbitrage and foreign currency dealing system, is a major challenge to Centre-file and NMW, two large online bureaux which between them account for 85% of the market in which CCF is selling its product.

Advantage

Fiscal is not a database system in the conventional sense, relying instead on direct accessing of files using variable length keys. This means that the software is not carrying the huge operating overheads associated with attempts to use conventional database techniques to process conventional commercial data.

Volume and response time limitations are overcome in the Fiscal approach by increasing the number of machines supporting the system, although maximum advantage of the package obviously lies in a customer having less than the quoted peak handling capacity of 1,000 share bargains a day.

The prospects for Fiscal are substantially enhanced by the likely advent of million-byte minis within the next two years.

Simon has set his sales target for next year at five complete systems installed. This will give CCF about 15% of the market and would push turnover to £1,000,000.

NMW shares still rising

IN anticipation of what look like record profits, NMW's shares have continued to advance and now stand at 835p, up from 185p last year. They have risen by over 400p since the beginning of December, but the current price still leaves them at a lower valuation than those of ACT and Scandata Interoational, companies trading in the same sector of the Stock Exchange.

Profits at NMW are closely tied to turnover on the Stock Exchange. This was up 17% last year and NMW has also increased its share of the bargain accounting business by about 5%.

Full listed

APPLIED Computer Techniques became a full listed company on the London Stock Exchange last week.

Shares were traded at an average 127p, which shows little change from the 485p price before the four-for-one split which preceded the move from the 163(2) market.

Scicon acquisition

SCICON, the computer service subsidiary of oil giant BP, has announced the acquisition of the Californian consultancy Systems Control Incorporated.

Systems Control is not a quoted company and Scicon paid $10 million to the shareholders, most of whom are employees of SCI, to acquire control.

The acquisition will increase Scicon's turnover by about $25 million in the US.

Bureau losing its lead

ROLFE and Nolan looks set to lose its position as the most profitable UK bureau after a fall in the half-year profit from £76,000 last year to a current £52,000.

Shares fell back from 70p to 60p despite the fact that the Rolfe and Nolan board insisted that profit for the entire year would be at least as high as last time.

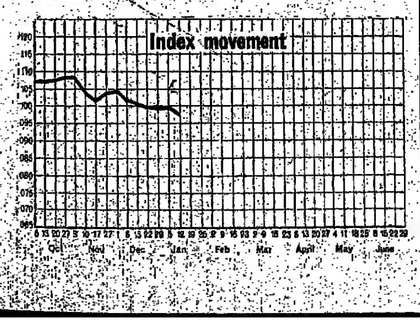
The company bought Binzl recently. It is confident that the acquisition will add about 25% to company turnover.

CW SHARES TABLE

Date: 9/1/81 — Index: 94.66 Change: -2.83

Pence 1980/81 High	Pence 1980/81 Low	London Stock Exchange Stock	Price	Chge	Pence 6 1980/81 High	Pence 6 1980/81 Low	UK Stocks Stock	Price	Chge
172	73	A.G.Crnp Tech (33p)	128	-14	28½	16½	Comp Reference	20½	+ ½
156	56	ACT Ord (50p)	103	+ ½	21½	11½	Comshare	18	
48	21½	B Serv Kent (50p)	32	+ ½	21½	11½	Computer Gens	20½	+ ½
120	44	Chubb (50p)	81	+ 1	69½	46	Comwell Data	69½	-2½
100	34	Data Sp Int (25p)	63		50½	30½	Data General	50	
67½	24	De La Rue (25p)	46	-1	117	70½	Dataplan	110	+ 1
188	143	Extel (50p)	177	-3	98	70½	Dataproducts	94½	
240	180	Fairey (50p) †	227	-1	28½	16½	Digital Equipment	27½	+ ½
260	190	Ferranti (50p) †	240	-12	28½	16½	Ex Data Sys	28	+ ½
53	30	Gen Scan	47	-1	28½	16½	Gen Automation	28	+ ½
80	50	Kalamazoo (10p)	78		28½	16½	Harris	28½	+ ½
260	200	Kode Int (50p)	227	-3	28½	16½	Honeywell	28½	+ ½
270	200	Micronet (50p)	240	+ 1	28½	16½	Honeywell Bull	28½	+ ½
270	200	Norcros B Secs (50p)	240	+ 1	28½	16½	Hoskyns	28½	+ ½
270	200	Phillips Lamps (£1.10)	240	+ 1	28½	16½	IBM	28½	+ ½
270	200	Plessey (50p)	240	+ 1	28½	16½	ICL (50p Ordinary Deals)	28½	+ ½
270	200	Racal Elec (50p)	240	+ 1	28½	16½	Informatics	28½	+ ½
270	200	Thorn-EMI (25p)	240	-10	28½	16½	Logica Ord	28½	+ ½
					28½	16½	Logica Warrants	28½	+ ½
					28½	16½	Microwave Sensor	28½	+ ½
					28½	16½	Norsk Data	28½	+ ½
					28½	16½	Prime	28½	+ ½
1980/81 High	1980/81 Low	Stock	Price	Chge	28½	16½	Sperry Corp	28½	+ ½
105p	68p	Amdahl	81p	+ 2p	28½	16½	Storage Tech	28½	+ ½
28½	15½	Ampex	22½	+ ½	28½	16½	Tandy	28½	+ ½
51	30½	Auto Data Pro	46½		28½	16½	Texas Instruments	28½	+ ½
28½	16½	Burroughs	28½	-½	28½	16½	Tymshare	28½	+ ½
21½	11½	Comp Automation	18½	-½	28½	16½	Wang Labs B	28½	+ ½

The table shows the closing prices in London on Friday and in America on Thursday. The share index is based on the prices of the UK companies in the table. Highs and Lows have been adjusted where necessary.



Centre-file stages bureau coup

NATWEST Bank's bureau subsidiary, Centre-file has scored a victory over rival independent stockbroking bureau NMW by capturing NMW founder brokers Charlton Seal Dimmock, as a customer.

One of the biggest stockbrokers in NMW's Manchester home territory, Charlton Seal Dimmock was a financial contributor to and founding member of NMW in 1971.

Centre-file, which has no sales force, implemented Charlton Seal Dimmock's client and accounting files on its computers in London last weekend.

The contract between Centre-file and CSD is rumoured to be worth over £300,000 s year. CSD is the first provincial customer to join the Centre-file system.

The highly lucrative stockbroking bureau business is competed for bitterly by only four rivals.

Centre-file, founded by John Hoskyns in 1966 and eventually purebased by Natwest, has been in the business longest and suffered most at the hands of NMW, which has increased its share of Stock Exchange business from 16% in 1975 to 35% this year.

NMW's growth is even more spectacular when one recalls that its entire operation was wiped out in 1971, with the North Western-Midland Stock Exchange merger.

The Stock Exchange refused to buy NMW's equipment, which was all that was left of the bureau's business after the merger.

The loss of Charlton Seal Dimmock, allegedly unmourned by NMW's managing director Brian Johnson, is the first break in the virtual monopoly NMW established among provincial stockbroking firms.

NMW's reply to Centre-file's comeback was to observe that there will always be a degree of customer volatility in any market place.

It should be seen as an aberration, said NMW, and one which meant little compared to NMW's penetration of Centre-file's home patch in London.

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PROGRAMMERS' PAGE

by Pamela Rowe

A model that parallels human thought process

IN this, the last episode of Solution to a Problem, the lid is taken off Production Systems, a language model by Newell and Simon to simulate human thinking processes.

First think of a number. Not any number, but the specific one for each letter to solve this cryptogram.

DONALD
GERALD
ROBERT

(given D = 5)

From little puzzles grow great research studies. While you pondered, did you matter a little/a lot/all the time? Volunteers especially trained to think aloud showed N & S that reasoning goes through clear and precise states of knowledge connected by operators. To graduate from one state to another, operators such as addition, search, value assignation and substitution are evoked.

All this N & S summed in a graph, the Problem Behaviour Graph, where knowledge states are nodes and operators arrows (see Figure 1).

The crux of the matter lies in how the operator is activated. Newell and Simon wanted to devise a model so precise that it could specify a computer program. They wanted a language, and needed one that could define the particular circumstances in make an operator go live.

Ideas for just this had been kicking around the computer science department for some time, but N & S pioneered its development as Production Systems.

Essentially, PS consists of a set of production rules, each with a condition connected to an operator (see Figure 2).

Either the condition or the action may be multiple, but if the condition(s) are true, the operator is activated. The corollary is that no condition means no action, though the computer keeps on checking until one is satisfied.

The list of rules is stored as a table in the database and the system recognises if the condition is true by pattern matching against data in working memory. Suppose it tried to assess the product rule shown in Figure 3.

A letter is assigned to parameter 1 and a number to n, so that for example, the condition becomes D = 5, and this is checked against working memory. Finding it present (D = 5 was given initially) the system takes the actions on the right-hand side. It searches for (1), now D, and stores the result, the column number e, in working memory. The sum of this column (c = 6) is then calculated and again stored.

This result can now be used in the next Production Rule, as shown in Figure 4. The possible value or values assigned to a letter are tentative, hence the question mark.

In working memory now is D + D = 10, so the operator VALUE is triggered to assign T = 0.

Many other operators are possible, but it is important to keep the set as small as is feasible – one for every occasion would defeat the object of defining a set of rules. Newell and Simon devised 14 production rules which generated 237 different knowledge states, including provision for carry-overs to the next column.

It may happen that two rules are equally valid, and conflict. Priority has to be decided and built into the language.

There are several ways of choosing. Priority can be given to the rule satisfying the most recent data additions, or to the most complicated rule (oh the premise that it arises more rarely). Alternatively, any rule just activated can be ignored.

Another issue is removal of data from working memory. Constant addition means eventual saturation, and deletion can be on the basis of either oldest, or problem-specific data.

Production Systems differ from other similar systems because no pre-determined sequence is necessary. Any and every time the conditions are met, the operator is activated. Neither do actions have to be specific sub-goals as in means-end analysis – they can happen whenever circumstances are right.

New rules can easily be added when a plausible set of conditions is discovered, and since each rule is independent of the others, alteration does not upset the existing ones.

However, more rules may mean more conflict. The system can also teach itself. Results can be added to the database where production rules are stored, as well as to working memory. The language thus learns as it goes along.

The prickly question of directly comparing the human brain to the computer now crops up. At the risk of offending centres of artificial intelligence, let us grasp the nettle firmly and say that it is not feasible.

The problem is that capabilities are so different. The computer has a prodigious memory and lightning calculation speed, but lacks the vast background of knowledge and experience (database) of even the most restricted human being. The human mind is capable of judging fine distinctions at levels outside the range of the most sophisticated machine. It seems the two are more complementary than competitive.

With these provisos, human thinking processes can be mimicked by process operators, made explicit by computer programs, like PS. Its two memories, the production rule memory and working memory, have been linked to human long-term and short-term memory respectively. The activation rules are likened to the basic processes underlying cognition, and conflict resolution to strategies for suppression or blanketing of perception.

Several human studies have used PS as a basis. Simon in 1972 compared solutions to the cryptarithmetic Doppies problem (Programmers' Page, December 25, 1980) to their load on working memory. Overloads have to be ruled out as possible human strategies.

A year later Young investigated children's approaches to problem-solving and modelled different stages of mental development by addition or deletion of new production rules.

Could it be that all human experience can be viewed as the acquisition of production rules linking sets of circumstances to specific actions? A case of getting data while ye may. And if a computer was supplied with enough rules, could it not make rational judgments?

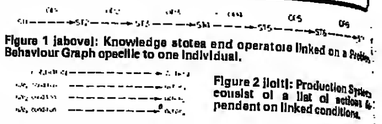

Figure 1 (above): Knowledge states and operators linked on a Problem Behaviour Graph specific to one individual.

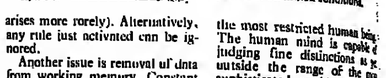

Figure 2 (left): Production System consist of a list of actions dependent on linked conditions.

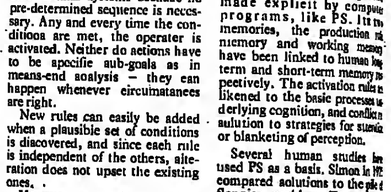

Figure 3 (above).

Figure 4 (below).

Ledger system written by accountants

TUCKED up coslly in one of the Dorchester's comfortable chairs, with a coffee in one hand and a gin in the other, I listened to a description of the advantages of File Management System.

Produced by Armitage Norton Consultants — an offshoot of the chartered accountants Armitage & Norton, and engineers The Ewbank Consulting Group — FMS is an integrated ledger system written for accountants, by accountants, and sticking very much to recognised accounting conventions:

"This makes it very easy for accountants, bookkeepers and clerks to understand and use the system," said Jim Shoesmith, senior computer consultant of ANC. "All the terminology is familiar, and the output reports don't have to be decomputerised for management and office staff."

Data is input via four main "books" of prime entry; the purchase day book, the sales day book, the cash book and the financial journal. All data is automatically recorded in the three ledgers the nominal, the purchase and the sales ledger, and simultaneously a report of input information is produced.

Another trail incorporated in FMS is for audit, and a separate audit disc, available at an extra, allows independent interrogation of data files by auditors. Interrogation can also be made, in response to customer queries, by the Reportwriter feature included as standard.

Security, sometimes a problem on micros, is covered by three levels of password. An extra measure is to contain all the more powerful utility and maintenance programs on a separate disc — non-possession being the ultimate deterrent.

Paul Furnelly, the system designer, described the search for the right hardware. "Though FMS will run on computers from makers with just twin floppies to multi-terminal hard-disc networking machines, we looked fairly hard at the market" to find the best machines for us."

Typical prices were quoted as from £2,250 for the CPU, from £500 for the printer, from £350 for the terminal, and from £1,000 for the FMS package.

Puzzler

TO mark the coming of a new year, I have put together the following skeletal fraction sum:

1/9 = x x x / x x x

The right-hand side of the equation contains all nine digits from 1 to 9, and the "right" and "ans" figures are immediately adjacent. Your task is to put all the digits in their right places to make up a valid arithmetic, so the first job is to locate the /.

See page 35 for solution.

MORE OF EVERYTHING AT...

The West Centre Hotel, Lillie Road, Fulham, London April 1-3, 1981

PERIPHERALS 81 SUPPLIERS EXHIBITION

SO SUCCESSFUL was the 1980 Peripherals Suppliers' Exhibition, that the organisers have had to make it bigger in every way for 1981.

MORE TIME — An extra day; three instead of two. Attendance in 1980 was treble that of the previous year and in the opinion of the exhibitors the RIGHT people attended.

MORE SPACE — Half as large again to accommodate all the companies that want to exhibit — already over 60 per cent of the 1980 exhibitors have re-booked.

AGAIN — Peripherals will bring together suppliers and buyers of technically sophisticated computer equipment in the relaxed atmosphere of a first-class hotel exhibition suite.

AGAIN — Peripherals is presented by the Peripherals Suppliers' Association and sponsored by "Systems International" the prominent monthly computer journal of IPC Business Press, the world's largest complex of specialist and business journals.

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OP SPOT

by Paul Fisher

Management skills are badly needed on shift

SOME operators feel they are tucked away in an armpit of the universe, others feel that the future belongs in them. Chris Schaefer argues the optimistic case.

A relentless talker, he believes that the operations department should be a "dynamic area" and that it is not the "ideal place for the pladder".

Schaefer calls himself an independent consultant, which in his case is not a euphemism for a tax dodge. After 14 years in DP (eight in operations) he now wears two hats to earn his living.

In his consultant's hat he specialises in IBM work, although he has worked with most other brands of mainframe. He spends the remainder of his time lecturing for Infotech Operations.

He is currently lecturing on disaster recovery contingency planning, and audit and productivity. He supports what amounts to the Infotech orthodoxy of seeing operations as a factory and of seeing ops managers as potential managing directors.

Says Schaefer: "The comparison with a factory cannot be ignored, and is used to encourage shop-floor techniques such as quality control, reliability, product orientation and maximum throughput at minimum cost." He could be talking about line workers at Longbridge or Dagenham.

He is fond of talking of the "company's information base" and of the "whole work flow" and refers to the computer as "the business asset" and the computer department as the "production unit".

Accessible

Such terminology has the virtue of making the mysteries of computing more accessible to those uninitiated into its ways. Just as the op needs to know "company objectives and policy" (which Schaefer advocates) so the management should appreciate what the employees tending the computer are up to.

If management needs the help of a comparison of a computer room with a factory, no one is any the less wise. To perceive information as a commodity is, in any case, basically correct.

One of Schaefer's missions in life is to boost the importance of the operator, the worker responsible for producing the commodity. In taking an optimistic view of the operator's value he wants to do away with certain misconceptions.

He reckons that the operations department's low reputation and status can be attributed to what others believe about it rather than how that department actually performs. For instance, the user department believes operations "to be a tribe of button pushers" who "can cope with any variance in volume or schedules with a minimum of advance warning".

Next comes data processing which, according to Schaefer, "views operations as a number of small units which should be addressed directly rather than through the management structure". This is compounded by a belief that training of ops is a waste of time and money and that "any level of technical skill or support can be provided from the development area".

The most damaging assumptions are the ones that operations makes about itself. Schaefer says: "Operations believes strongly in providing the service its users require whatever the cost. It believes in making do with what it has and accepts lack of time and senior personnel as a way of life".

Production

He talks of the old sort of operating team which "views the supreme achievement of its skills as keeping the wait light off and the system light on". If the ops are involved with teleprocessing there will have to be a greater involvement and, getting back to the factory analogy, there must be a belief in production.

The crux of Schaefer's argument is that there should be "management skills on shift".

Management skills implies management status and management pay to match. It also implies that user department misconceptions are revised. Schaefer recommends two things: career opportunity within ops, and training.

He says: "For the dynamic machine operator there must be a long-term career." Expanding on the theme he continues: "The old theory of operations being only a stepping-stone to the traditional path through to programming and then systems is dead and should once and for all be put to rest."

"The good operator may make a passable programmer and perhaps a reasonable systems analyst, but there are no directly related skills which when developed would guarantee a high contribution in all three areas."

Schaefer identifies three types of training: induction, on-the-job and technical. The first should "commit the employee and provide motivation for the longer term". On formal training he notes: "As computer sites become more individual in their mixture of hardware and software facilities, more tailored courses run with smaller numbers of delegates and for shorter periods must become the norm."

Schaefer's optimism is based on several factors: The demands of teleprocessing will require an increasingly managerial type of op. He predicts a degree of de-skilling because "with more automated system start-ups and mass online storage, we will need little if any peripheral operating".

Beyond that he foresees that "the transfer of the console to an area outside the machine room" will result in what he terms the "process control area".

Op's training outfit

LOOK out for a new name to operator training over the coming months. Protocol Operations is a six-man outfit which is mounting its first course on DOS at the end of February.

One member of the team is Phil Cartmell. Having parted company with Infotech Operations less than two months ago owing to policy disagreements; he is bouncing straight back into the operator training arena.

Cartmell doesn't want Protocol characterised as an Infotech splinter group and says: "We will concentrate exclusively on operations."

Protocol has lecturers on DOS/VS, TP and management. It will cover a total of 16 subjects split into technical and managerial divisions.

Technical courses will last three days and be held in hotels within Greater London at a price between £200 and £250. Maximum attendance will be 16. The division will be between the theoretical and the practical. Protocol is also anxious to promote in-house courses.

A micro-based simulator for operator training is being prepared.

Management courses are fully residential and will cost up to £500, a price tag which includes a stay in a South Coast hotel.

For anyone interested in freebies, you can scrounge a wall chart advertising Protocol's wares if you phone (0734) 760640.

Screening VDU victims

ALONG with the motorway box areund Land's End, one of the burning een-issues of our time ceotres oe whether VDUo are dangerous.

Common sense tello me that werking in front of a screen is about as risky as peeling eniees. For a more profeasional asoeement, oey actuary will tell you (for a fee) that the trades of the steeplejack or the bull-fighter ore far more dangerous.

Ie froet of me I beve e pile of clippings and twe documents, one from the Association of Technical and Managerial Staffo (ASTMS) and the other from the Health and Safety Exeeutive (HSE). Between them they have a bibliography of 138 referenceo, whieh geee to ohew that *someone* eareo.

The ASTMS decument, A Guide to Health Hezards of Visual Display Units, is packed with recommendatiens. These raege from the technical ("a minimum serece luminance of 75cd/m² is needed but normally around 150cd/m² is appropriate") to advice about switching the thing eff when it'o not ie use. There ie also something from ASTMS for the lover of the loony atatistic. Did you know that "It has been proveo that over 90% of eye defects are purely optical"?

The HSE's recent publicatieo, entitled Human Factors Aspects of Visual Display Unit Operation, tnpa this with the observation that "estimates of the prevaleaco ef photeaeoitive epilepsy in the general population range from 1 in 5,000 to 1 ie 10,000[sic]".

Thot gives the potecttial epilepttie a dog's chance of a VDU fit ereo chance at all. The report ledicates that VDUs do eot pose a health threat to most operators.

At eee point it states that many VDU problems "stem directly from task inherent demands".

If boredom can be counted as a health risk it's another ene te odd to the list of dangers which should alse inelude epilepsy, migraine, curved apine, radiation, cataracts and, believe it or not, rasheo. Apparently a ceuple of Norwegians developed face raohes after sitting in front of a screen all day.

Should anyone have beoe wouoded, er evoe irritated, by a VDU please write in and tell me.

Green fingers bound with magnetic tape

A SURVEY dating back a couple of years discovered that a high proportion of systems analysts were interested in landscape gardening. This may have been due to the fact that they are among the few who can afford a garden to landscape.

No matter, because I have a handy tip for the humbler computer gardening enthusiast. Magnetic tape is ideal for tying up chrysanthemums and geraniums, being strong, waterproof – and free, if you know where to get it.

Also, these plebby plants can be grown in a bucket so there is no need to save up for a country estate.

Only one company puts this much in a £475 teleprinter.

It's not the price that's the only thing that's remarkable about the LA34 DECwriter III. Its 300cps printing is comparable with machines costing twice as much. And it's equally versatile, with a host of options that can be added at any time to meet your changing needs.

Options

- Numeric keypad. Tractor feed. Terminal mode. Paper low/out tray. "Paper out" switch. Paper low switch. 20mA interface. Extended logic option. Optional spacing.

Principal Features

- Bi-directional printing at 30cps
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- Adjustable line spacing: 3, 4, 6, 8, or 12 lines per inch

Prices start at £475 for single sheets, rolls and fanfold up to 9.5 inches wide.

Extra for tractor feed: £75.

Extra for 14 inch fanfold: £100.

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PEOPLE and EVENTS

Prime appoints its first European VPs

PRIME Computer has for the first time appointed officers of the company to run major parts of its European operations. This reflects the company's recent success in Europe. Prime Europe now accounts for 40% of the company's annual turnover.

Peter Gyenes, formerly director of Prime's European marketing operations and David Cheesman, previously director of research, development and engineering are now vice-presidents.

Gyenes joined Prime three years ago. He previously worked for IBM, IBM World Trade and Xerox Corp. He holds an MBA in marketing from Columbia University.

Cheesman gained experience in the industry when he worked as director of small systems (international) support at Sperry Univac, and has been with Prime for two and a half years. He holds a BSc in electrical engineering, is a chartered engineer and a member of the Institute of Electrical Engineers.

Prime has 25 sales offices throughout 12 European countries and employs 200 sales and support staff with over 100 field engineers.

Technology consultant

A principal consultant for the Technology Management Centre has been appointed by Logica. Derek Barber took over the post at the beginning of the year, bringing with him several years' experience in communications and computing.

Barber joined NPL in 1954, to work on the early digital and analogue computers. He became involved in the interface between a computer and its environment and devised a standard interface which was a key tool used in the application of computers to process control.

In 1965 he became head of a group developing a research network based on packet switching. With Donald Davies he wrote Communications Networks for Computers. He was made head of information systems at NPL in 1969. At the end of 1970 he became chairman of the EEC committee that planned Cost Project 11, and in 1973 became director of the project.

Barber's experiences and involvement with the International Network Group (INWG), led to the publication of his second book, Computer Networks and their Protocols.

With Logica, Barber will be concerned with the management and organisational implications of the new technology.

Duggan

Walker

Greenbaum

Barrett

Hall

Mills

Research post at Urwick Nexos

Diana Duggan has been appointed to manage major research projects to be undertaken by the systems research division at Urwick Nexos. She joins the company from Logica, where she undertook technical direction of the Computing Services Association's consultancy study on the implications of text processing.

Christopher Walker is now head of data processing with Tyne and Wear County Council. His working life has been spent with local government, with the computer sections of the treasurer's departments of North Riding County Council and the Newcastle City Council, and since 1973 as chief systems analyst with Tyne and Wear.

Rufus Greenbaum has been appointed sales manager for the UK and Scandinavia at General Instrument. He joins from Intel, where he held overseas sales appointments for the last three years. Before that he was with Motorola and SGS and has about 18 years' experience in the European semiconductor industry.

Bob Barrett has joined Sintrom Electronics as product manager. He has worked for several major electronics companies in a marketing capacity. He has a degree in computing and is an associate members of the Institute of Marketing.

Richard Hall has been appointed general manager of Centronics Data Computer (UK). He has been with the company nearly five years.

Brino Mills, until recently chief executive of BOC Computer Services, has been appointed a non-executive director of Abtex Computer Systems.

Keith Nichols has been appointed product marketing manager for CAD/CAM systems at Ferranti Cetec Graphics. He was formerly with Vickers Shipbuilding Group.

Bill Williams, previously Southern region sales manager with Harris Systems, has been appointed to the board as director responsible for marketing at Synapse Computer Services.

John Roach has been elected president and chief operating officer of Tandy Corp in Tokyu. He joined the company in 1967.

Laurence Barrett has joined VNG Professional Services as personnel administrator. He was formerly with Lowndes Alex Computer Services and more recently the National Bus Company.

Lois Rice has joined Control Data as senior vice-president of government affairs. She is currently vice-president of the College Board in Washington DC and is a director of Control Data. She will remain on the board.

Jerritts on the board

Stephen Jerritts has been elected to the Honeywell board of directors. He is president and chief operating officer of the company's information systems business in Minneapolis.

John Oke has joined Harris as senior sales executive for the company's information systems international division in Slough. He previously worked for Honeywell and Zeus-Hermes.

Barry Payne has been appointed sales manager for Geest Microsystems. He was previously district sales manager at Control Data, and in 1979 was that company's manager of the year.

Sara Morrison and Paul Armitage-Wellher have been appointed directors of GEC. William Rees-Mogg will become a director in March.

Donald Lane and John Splawer of Informatics Inc have been given new responsibilities within the company. Lane has been promoted from vice-president to vice-president and general manager of the applications products division, replacing Splawer who becomes division vice-president at the company's Los Angeles headquarters.

Andy Graham has been appointed Southern area manager at Univers Computer Company. He joins from ADP Network Services.

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Company
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Liveware File

by Don

DIARY

JANUARY 19

Automated documentation and testing of real time systems. BCS Cheltenham and Glos branch, Queens Hotel, Cheltenham, 7.30.

The use of graphics. BCS Glasgow branch. The Music Room, Staff Club, University of Strathclyde, John Street, 7.00.

Visit to Ford headquarters, Crawley. BCS Hampshire branch. Names in advance to 'Martin Muse' on Salisbury 20323.

JANUARY 20

Minicomputers in the oil industry. BCS Aberdeen branch. College of Commerce, Hoburn Street, Aberdeen, 7.00.

Joint meeting of BCS Belfast branch and Institute of Management Services control in high technology industry. Queen's Computer Room, 1 College Gardens, Belfast, 8.00.

Factory automation and production control – impact on TV manufacture. BCS Croydon branch, Maple Room, Fairfield Halls, Croydon, 7.15.

Meeting. Data communication group, BCS HQ, London, 6.00.

Medical computing. BCS Leeds branch, Parkway Hotel, Leeds, 6.30.

Communications in principle – the theory of communications and networks. IDPM W London Centre branch, Caversham Bridge Hotel, Reading, 7.30.

Microcomputer workshop. IDPM Scottish branch, Edinburgh. Ticket holders only.

JANUARY 21

DP communication and its satisfaction. IDPM Central London Branch, Pearl and Dean Studio, 11 Broadwick Street, London W1, 6.00.

Data dictionary experience. BCS Database users group, Room G6, New Engineering Block, University College, London, 2.00.

Word processing. BCS Leicester branch, James Went Building, Leicester Polytechnic, 6.15.

Micro-trends. BCS Manchester branch, NCC, Oxford Road, Manchester, 6.15.

JANUARY 22

Designing a computer unit. BCS Coventry branch, Room N126, Lanchester Polytechnic, Coventry, 7.30.

Half-day colloquium on the system-based approach to manufacturing automation. IEE/BCS, Savoy Place, London. Details on 01-240 1871.

What's the point of Europe? Basil de Ferranti, MEP. BCS London branch, Waldorf Hotel, London, 6.00.

COURSES

INFORMATION Technology for managers. A one-day course which will provide a non-technical overview of current and possible developments as a course to be held at Central London Polytechnic, March 11-13. The emphasis will be on practical applications of information technology and its social, organisational and ethical consequences. It is aimed at [illegible] will attract [illegible] Polytechnic, Wells Street, London W1A 3AE. Tel: 01-636 [illegible]

[illegible] Computer Systems for Engineers. The course will cover [illegible] and business technology, electronic mail and message switching, communications and information storage and retrieval. Organised by the faculties of [illegible] Selection of the course [illegible] For more information contact [illegible] Polytechnic, Wells Street, London W1A 3AE. Tel: 01-636 [illegible]

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DEC	PDP 11/70 Basic+ programmer with good knowledge of RMS database. Long contract based in London, but with real opportunities for international travel.	288	LONDON

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The Council currently operates an ICL 2958 computer which will be replaced in September 1981 by an ICL 2988. A computer auditor is required following the advancement of the career of the present postholder. Applicants are required to have practical technical experience of computers including a knowledge of programming and systems analysis, must be able to communicate effectively with management at all levels and, ideally, would have an appreciation of accounting or audit disciplines.

The postholder is responsible to the Chief Internal Auditor and is expected to make a major contribution towards the efficiency and effectiveness of the Council's financial control systems including the physical and operational security of the computer installation; the appraisal and development of new applications and enhancements to existing applications; the confidentiality of data and the provision of an information service to assist the audit function in general.

This post is suitable for a computer specialist, ideally, applicants should have financial experience.

Applications, stating age, experience, education, present employment and the names of two referees, to:

County Treasurer (Ref. JS/RF), County Hall, Taunton

Prospective applicants wishing to discuss the post should ring Tony Parr on Taunton 73451, Ext. 538.

Closing date: January 23, 1981.

(3988)

DHSS HYPERTENSION CARE COMPUTING PROJECT

This project, which is based at Northwick Park Hospital, processes clinical data about patients being treated for raised blood pressure in a number of hospital clinics and general practices around the country. The processing is at present in batch on an ICL 1900 but a new 5-year grant has been obtained from the DHSS to extend the system and move it to the new local DEC 2060, and to acquire remote intelligent RJE terminals.

The project grant supports four posts for computing professionals and three of these are at present vacant. Applicants should have a formal training in computing up to graduate level (or the equivalent length and breadth of experience). The length and type of post-graduate experience required varies with the different posts.

Principal Analyst/Programmer

£8,844 to £10,275 (NHS Scale 14)

This post is for someone with considerable technical knowledge and experience and the ability to lead the small team. The appointee will help to choose the new equipment and to design and implement the new system. At least five years' post-graduate experience including file handling systems, programming in more than one language and supervising staff, is required. This appointment terminates with the current grant on May 31, 1985.

Senior Analyst/Programmer

£7,681 to £9,288 (NHS Scale 9)

This post is for someone to retrieve and analyse data from the file and help with the new system. At least two years' post-graduate experience of systems analysis and programming, preferably within a team, is required. This appointment is for two years.

Analyst/Programmer

£8,839 to £8,221 (NHS Scale 4)

This post is for someone to design and implement program and will afford the opportunity for some experience of systems analysis and design. It is suitable for someone who has received appropriate training and wishes to develop their career by obtaining practical experience. This appointment is for two years.

Further particulars and application forms may be obtained from the District Personnel Department, Hammersmith Hospital, Du Cane Road, London, W.12. Telephone: 01-743 2030, extension 49.

The closing date is February 2, 1981.

(3984)

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EXPERIENCED COMPUTER ENGINEERS

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(3985)

SENIOR SOFTWARE ENGINEER

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Application forms and further details may be obtained from Mr. A. Mortiner, Staffing Officer, M.R.C. Clinical Research Centre (Northwick Park Hospital), Watford Road, Harrow, Middx HA1 3UJ, quoting ref. 109/3/4100. Closing date 30.1.81.

(3986)

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(3987)

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Ref. AW/1501

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Ref. NW1/1501

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Contact: Jim Baker

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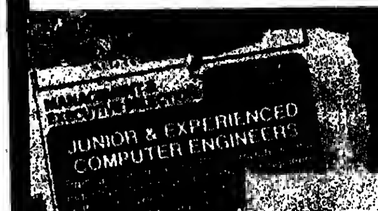

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The British Council works overseas in about 80 countries and is engaged in a wide variety of educational and cultural activities. Our ICL 2960 is currently being operated under contract but we are planning in our own staff. We are looking for a Computer Operations Supervisor and two Senior Computer Operators to work in the ICL building at Putney, where our computer is housed, on our batch processing and on-line applications which run under DME and GEORGE 2 + 3.

The Computer Operations Supervisor will have responsibility for controlling day-to-day operations and supervising Council staff in the computer room and media library. Duties will include scheduling work, liaison with Council departments in central London and with ICL, responsibility for ordering supplies of computer peripherals, inputs and others, liaison with engineering services, maintaining control statistics, and providing holiday and sick leave cover. Applicants should have a good general education and at least two years' experience in computer operations including GEORGE 2 + together with proven ability in technical communication and the supervision of staff. Knowledge of the ICL 2900 operating under DME, telecommunications or systems software would be an advantage. Starting salary is £7966 rising to £9571, 22 days annual leave plus 2½ privilege days. Non-contributory pension scheme.

The Senior Computer Operators (2 posts) will act as shift leaders, each shift consisting of one senior and one junior operator. The senior operator will be responsible for running the work of the shift and will share operating duties with the junior operator including controlling the 2950 through its VDU console, loading computer peripherals and general maintenance of the computer hardware and software. Applicants should have a good general education and previous experience as a computer operator. They should be capable of working under minimum supervision and should be good at dealing with all levels of staff. Experience of ICL software and hardware, knowledge of GEORGE 2 + or communications facilities would be an advantage. Applicants should be physically fit. Computer operators normally work a Monday to Friday 2-shift system (0800-1600 and 1200-2000 hours) alternating shifts weekly. Starting salary is £8916 at age 20 or over, rising to £7761. Proficiency payments are payable following one year's satisfactory performance in the post. 20 days annual leave plus 2½ privilege days. Non-contributory pension scheme.

For further details and an application form, to be returned by 30 January 1981, telephone or write quoting DP/1/82

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10 Spring Gardens, London SW1A 2BN. Tel: 01-930 8466 ext 2531 or 2544.

IMS Systems Programmer

Amsterdam - 1 year — **£19,000+p.a.**

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We are seeking a systems programmer with one or more years IMS experience. The initial assignment is to spend one year working as a member of a 3-man team in the Netherlands. The other team members consist of a senior systems programmer and a trainee, and the specific duties to be performed include penning and maintaining 1.1.6; planning for and implementing 1.2; providing advice and support to application development teams; and assisting in the evaluation of new DB/DC facilities and techniques. Our client's data centre runs MVS/SE and has a heavy IMS transaction load, with links to internal and external networks.

IMS DB Support

Netherlands - 9 months+ **£19,000+p.a.**

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We are seeking an IMS specialist with a good understanding of IMS database design, and familiarity with IMS utilities plus the technical aspects of DBA work. The initial assignment is to work for at least 9 months in the Netherlands, assisting in the implementation of IMS at a VM/VS1 4341 installation, which has several existing systems running on a non-IBM DBMS. Duties will include database design for existing and planned applications; the generation of DBD's, PSB's, etc; setting up IMS standards and procedures; and the provision of training and technical support to application development groups.

CDS is a 45-strong Anglo-Swiss consultancy specialising in providing Systems Programming, Database and Telecommunications support to European IBM users. The majority of our staff are employed by CDS Ag of Zurich, but we are also prepared to enter into agreements with independent consultants.

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This established software consultancy is continuing to expand rapidly and has an urgent requirement for experienced Analyst Programmers.
Working in the areas of on-line commercial applications, including inventory control and accounting, you must be dedicated and energetic and be capable of taking projects through from feasibility to on-site implementation.
Essential qualities are knowledge of IBM SYS 34, 3-4 years COBOL plus substantial analysis exposure.
Bachelor status is preferred but equal consideration will be given to married applicants without children. Tax free salary, plus furnished accommodation, and a company car are included in an excellent package. Initial interviews will be held in London.

Contact: Brian Postles

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One of the leading software houses has immediate opportunities for Designers and Senior Programmers to join a team developing a sophisticated real-time system where the security aspects are of prime importance.
Candidates must have been involved in the design, development and programming of security software for large mainframe and real-time applications. Experience in designing controls for access to systems, passwords and other types of checking is essential.

Contact: Jim Baker

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Thames Valley — **c. £10,500 + car**

Our clients are the originators and distributors of a world renowned range of Database and T.P. software products.
They are currently looking for good all-round DP technicians to work in their Product Support Group.
Applicants should be well versed in business techniques, and must have a thorough understanding of commercial data processing. An IBM programming and analysis background is essential. The ability to communicate with customers will be an important requirement of the successful candidates together with obvious technical ability.
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Contact: Margaret Stevens

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Our client, an expanding systems consultancy are looking for a number of programmers to design and develop specialised software for turnkey and on-line projects.
Applicants should have a minimum of one years RPG, COBOL or COKAL, or any other standard high level language.

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Our client, a successful specialist engineering and manufacturing organisation, has an opportunity for a Systems Analyst who is looking for a career step with considerable future potential.
Candidates should be graduates, or professionally qualified, with an extensive systems background in developing commercial applications, preferably in a manufacturing environment using ICL equipment.
This is a key appointment in D.P. development and applicants must have the personality, presence, leadership, intellect and capacity to deal with all levels of management and staff. Large Company benefits.

Contact: Jim Baker

Analyst/Programmers (BASIC + 2)

City — **to £9,000**

Our Client, an interesting and unusual financial organisation, is looking for experienced Programmers to join them at a time when they are installing two PDP 11/70s.
A minimum of two years experience of BASIC+ or BASIC+2 language from a financial or commercial environment, together with a knowledge of commodities and DEC hardware would be a definite advantage. The ability to understand users and their problems is essential. Good salaries and generous benefits are offered to successful candidates.

Contact: Janet Chilvers

Communications Programmers — Babbage

South West of London — **£8,000–£9,000**

Continuing expansion of our client's international Videotex business has created opportunities for GEC 4000 Babbage programmers in real-time and network systems.
Applicants should have at least four years programming experience and be capable of tackling packet switching, colour and business graphics, in this fast moving and exciting field. Possible overseas travel.

Contact: Jim Baker

Mini Support Analyst Programmers

London — **£7,000–£8,500**

Due to steady expansion, our Client, an internationally known mini manufacturer, specialising in the marketing of banking, word processing and library circulation systems, wishes to recruit two programming professionals to join their development/support team.
A minimum of two years on-line programming experience, preferably gained in a mini environment, would be ideal, but consideration will be given to high calibre candidates with a sound on-line programming background. Training facilities and career prospects are excellent as this organisation firmly support promotion from within.

Contact: Isobel Bruce

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There will also be three of the world's most sophisticated reservoir simulators and other software in respect to well performance analysis and seismic data processing. A large database system will also be installed.

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SYSTEMS ANALYSTS to work on capacity planning and service level analysis, system modeling, physical planning and changes/upgrade control. A minimum of 3 years experience with large computer systems, preferably IBM and specific experience with MVS/SE, MSNF, SNA, NJE usage is required.

COMPUTER SYSTEMS ANALYSTS (GEOPHYSICAL) to develop, install and maintain geophysical computer applications systems. Applicants should be conversant with seismic processing techniques or geological data management systems. Systems design and programming knowledge is important and experience with large IBM systems, Fortran and PL/1 is a must.

COMPUTER SYSTEMS ANALYSTS (Petroleum Engineering) to develop, install and maintain technical computer applications in support of the petroleum engineering function. Applicants should be conversant in production, reservoir and drilling engineering technical concepts. Familiarity with large IBM systems, Fortran and PL/1 is required.

SYSTEMS PROGRAMMERS - experience in one or more of the following is required: MVS, JES 3, SNA, NJE.

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Permanent Appointments

Systems Analysts North West C£9000 required for major organisation who are expanding. At least three years commercial systems experience on any mainframe. Excellent package + bonus. Ref: DE/245.

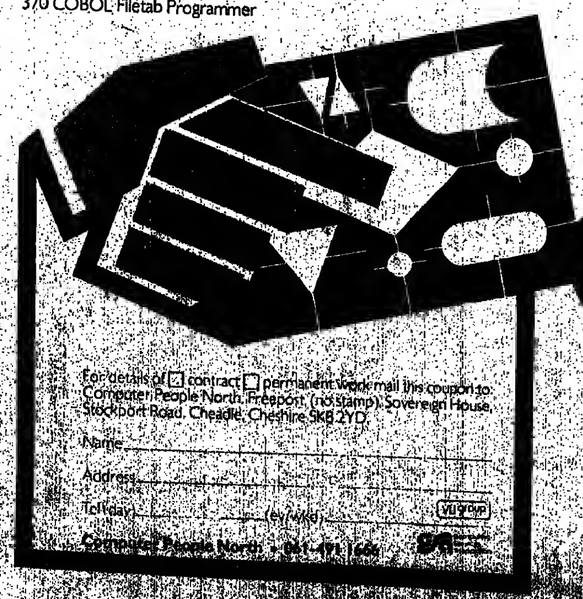
Programmers Manchester area To £9000 needed for a nationwide software house. Experience of BASIC on PDP 11's in a commercial environment essential. Interested? Contact giving Ref: DW/198.

IBM COBOL Programmers South Manchester C£8000 needed now to join a major service organisation. TP experience an advantage, excellent package including relocation. Ref: DE/352.

Programmers and Analysts N. Manchester £7500+ If you have Burroughs experience you are required for an expanding installation. Financial and manufacturing background preferred. Ref: DW/149.

Contract Assignments

ICL 2900 Systems Analyst
ICL VMEB COBOL Programmers
HP 3000 Image Analyst
370 DOS/VSE Systems Programmer
COBOL MKIV Analyst/Programmer
Business Analysts
370 OS System Programmer
370 COBOL CICS/DL1 Programmers
370 CICS SYSTEMS Designers
S34/38 Analyst/Programmers
Burroughs DMS2 GEMCOS Programmers
370 COBOL/Fortran Analyst Programmer
S34 RPGII Programmer
2904 COBOL/RPGII Programmer
370 COBOL Filetab Programmer



For details of ☑ contract ☐ permanent work mail this coupon to: Computer People North, Freepost, (no stamp), Sovereign House, Stockport Road, Cheadle, Cheshire SK8 2YD.

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Midlands

There are numerous contract and permanent vacancies in the Midlands region, and a few are shown below. Get more information by ringing Computer People Midlands on 021-643 8501, or by mailing the coupon.

Permanent Appointments

Project Manager East Midlands c£9000 pa+car IBM background required, SYSTEM 3 preferred with RPGII/COBOL Programming experience. Must have at least 6 years D.P. background together with management skills. Ref: RB/J328

Senior Programmers Analyst Programmers Birmingham Area To £9.5K for massive new development. Experience with any of the following: IBM IMS, PL1, COBOL, APL or CICS is necessary. Ref: DD/J323.

Systems Analysts Birmingham Area To £9000 pa Challenging IBM environment undergoing major reorganisation and development. COBOL programming experience desirable. Excellent opportunities available within a well-integrated project team. Ref: PH/J324.

Programmers/Analyst Programmers Birmingham area to £8000 pa Real-time or on-line mini experience – preferably DEC or IBM together with BASIC/BASIC+. Minimum 2 years D.P. experience. Excellent opportunities. Ref: PH/J327

Contract Assignments

IBM 8100 Analyst Programmer
SHADOW TOTAL COBOL Programmers
PL/1 IMS Programmers
OS COBOL Analyst Programmer
ICL ME 29 COBOL Analyst Programmer
U90/30 OS3 COBOL IMS90 Programmers
U418 Assembler Programmer
H64 TDS/IDS COBOL Programmer
PDP11 BASIC+2 RMS Programmer
HP3000 IMAGE COBOL Programmers
BTI 4000/5000 Consultant
O.& M Consultant – Manufacturing
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DEC RSX 11M MACRO11 Programmers
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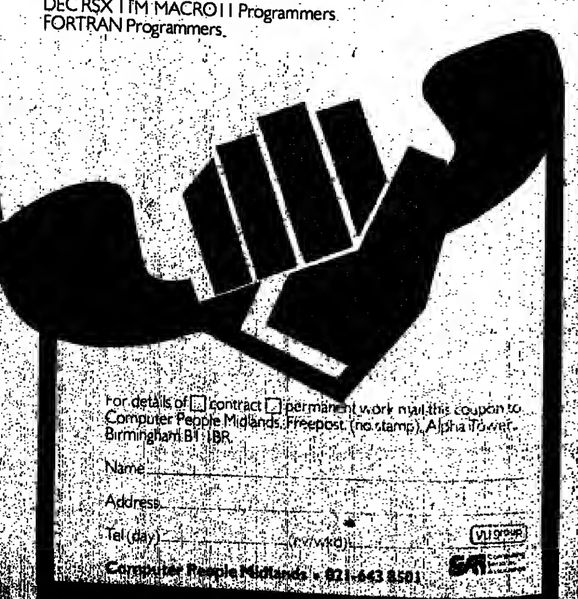

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Wherever you are.

London

The Greater London area, and the Home Counties which are serviced by Computer People London, and the opportunities that follow are a small selection from the many we have available. To discuss these or other opportunities in the London area, telephone Computer People London on 01-836 8411, or mail the coupon.

Permanent Appointments

Senior Project Leader East London/Essex c£11000 Sound analysis experience from a commercial background is required, preferably on IBM hardware. Good COBOL knowledge is an advantage. Ref: F/11805

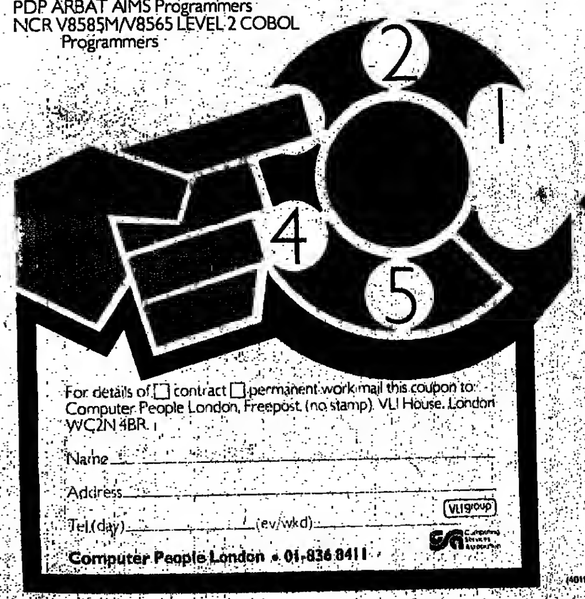
Analyst Programmers and Programmers St. Albans Herts £8000 – £10,000 A minimum of 18 months experience, of RPG, BASIC or COBOL to work in an expanding software house. Good promotional prospects. Ref: SN/10545.

Analysts Saudi Arabia to £21000 A leading oil company needs experienced analysts with at least 3 years PL/1 to work at their developed complex on the Arabia Gulf. Ref: PM/58C

Command and Control N.W. Home Counties £9000 – £15,000 Systems Software Specialists with some knowledge of communications, military applications, message switching, database, graphics or security systems are required at all technical levels for a major project. Senior positions could also command a company car. Ref: CB/11816.

Contract Assignments

IBM SERIES 1 Programmer
PL1 Programmer with RPGII on System 34
OS PL1 IMS DB/DC Programmer
ICL System 10 ASSEMBLER
IBM DOS Systems Programmers
IBM SVS/MVS Systems Programmers
IBM DOS/VS PL1 Structured Programmers
PDP BLIS Programmers
ICL 1900 G3 Analyst
IMS DB/DC COBOL Applications Designers/Programmers
IBM SYSTEM 34 RPG2 Programmers
IBM 8100/3790 Programmers
IBM DOS/VSE DL1 CICS COBOL Programmers
PDP ARBAT AIMS Programmers
NCR V8585M/V8565 LEVEL 2 COBOL Programmers



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South

Based in the suburbs of London, and the South Coast, we deal in permanent and contract vacancies in the computer communications and process control fields.
Phone Computer People South on 01-680 4013, or mail the coupon.

Permanent Appointments

Systems Analyst Woking Surrey C£8500 You should have in excess of 3 years commercial experience. The company utilise an ICL 2960, therefore experience gained on ICL mainframe would be advantageous as would knowledge of insurance applications. Ref: MB/1.

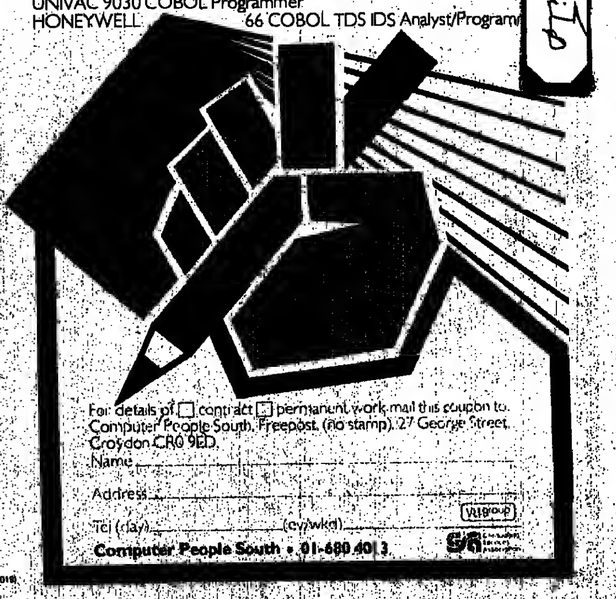
Programmers Surrey Salary negotiable Urgently required experienced IBM Programmers to work on Banking applications. Knowledge of IMS DB/DC or CICS DL1 would be advantageous. The Company offer a very high remuneration package coupled with the usual benefits associated with a Banking organisation. Ref: MB/2.

Analyst Programmer Ashford Kent C£8000 A world-famous Company are looking for a Programmer with at least 2 years PDP FORTRAN and a good knowledge of RSX11M to aid the implementation of and maintain a graphics package, liaising with both UK and abroad. Full relocation. Ref: SAB/1.

Systems Analyst Kent Package £10K (Inc. mortgage subsidy) Minimum of 3 years experience in design and implementation, preferably with an insurance/financial background. The installation offers both mainframe for processing and mini computers for datacapture. Flexitime, relocation contributions etc. Ref: SAB/2.

Contract Assignments

Burroughs 1800 MCP COBOL Programmer
Burroughs 6700 MCP COBOL Programmer
IBM 370 IMS Database Programmer
IBM 370 OS COBOL Programmer
IBM 370 OS COBOL/IMS Programmer
IBM MARKIV Programmer
IBM 370 OS COBOL Programmer
IBM 370 CICS/DL1 Analyst Programmer
ICL 2900 COBOL Programmer
ICL 1900 COBOL Analyst/Programmer and Programmer
PDP 1134 RSX11 FORTRAN Programmer
PDP 1134 RST/E BASIC+2 Programmer
UNIVAC 9030 SYSTEMS Programmer
UNIVAC 9030 COBOL Programmer
HONEYWELL 66 COBOL TDS IDS Analyst/Programm



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While the economy is sagging around us, we at CoOperators have **expanded** our services. Since 1974 we've been leaders in the contract operations field, and now we are proud to announce our new permanent recruitment division, headed by Kay Stebbings.

A few permanent career opportunities are shown below, and there are many more throughout the U.K.

A new service for 1981

If you're thinking of changing your job you should be talking to Kay-Mary or Madeleine at CoOperators. Ring 01-836 8411 or mail the freepost coupon. TODAY.

If it's contract work that you're interested in, we have a constant supply of contract assignments – at home and abroad – so make sure you're registered with us by ringing Liz or mailing the coupon.

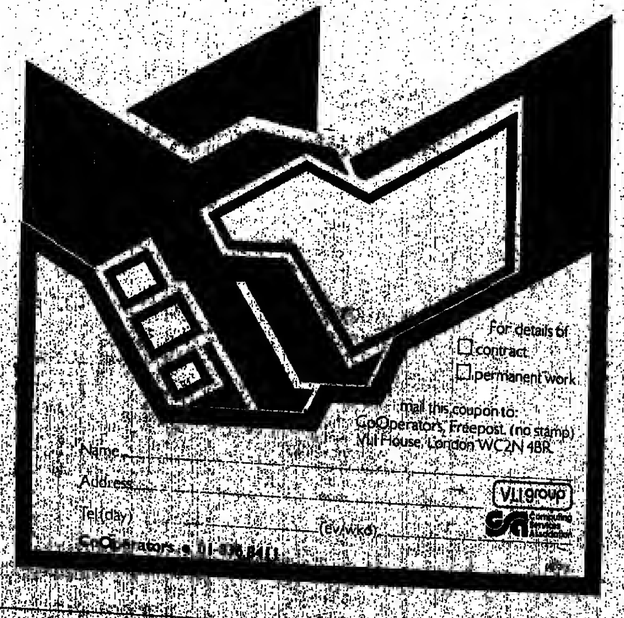
Permanent Appointments

IBM Senior Operator £6-£6.5K Mid-Surrey
Wide scope for promotion can be offered at this dynamic and expanding IBM 3031 installation. Our client's current requirement is for a competent console operator who has a sound working knowledge of OS/VS2 with MVS and JES 2 coupled with the ability to act as a senior member on shift. Company benefits are excellent including relocation assistance. For further details please 'phone Kay. Ref: IPJ 3/CW

IBM Operator £6.2K City A large, international, centrally located company is offering a good salary and excellent company benefits for a good DOS/VS or DOS/VSE operator with 18 months experience. A knowledge of CICS and BTAM would be an advantage. For more information regarding this position, where good opportunities exist for training and promotion, please contact Mary. Ref: IP5/CW

Operations Manager c£10.5K package Kentcoast
A professional Operations manager is sought for our well-established client whn has recently installed new hardware at their installation based on the Kent coast. The ideal applicant will not be lass than 30 years old, have proven supervisory experience and the ability to provide good documentation. Knowledge nf the insurance field would be a distinct advantage. Relocation assistance available. For further details please 'phone Kay. Ref: KS27/CW

Network Controllers £5K+ days NW London
Responsible operators with experience nf teleprocessing networks are required by a national company. Good future prospects with large company benefits are offered in return for your skills in TP Network Control, fault processing and client liaison. For further details please contact Mary. Ref: MC24/CW



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Computing Personnel Consultants

CONTRACTS..

In this article Geoffray Richardson, ganaral manager of Computar People South, takas a parsonal and a busi-nass view of tha South of England, and its charactaris-tics as a markat for frealanca and contract staff. Richardson joined the Vic Group (of which Computer People South is a member) in 1976, and has risen through sales and management positions to the control of CPS.

The South offers opportunities away from big-city blues

THE North, Midlands and London all have hubs of business and generally a common industrial theme, while the South has a more varied business structure and no single specific theme of industry.

For the purpose of this article I have defined the South os Kent, Surrey, Sussex, Hampshire, Wiltshire, Dorset, Devon and Cornwall. The computer contract professional knows that London has plenty of work, and it has been excluded for that reason.

Industry in the South is scattered far and wide. For example, Lancashire has an area of 2,276 square miles while Surrey spreads over 647 square miles – Lancashire has the two main population and industrial centres of Merseyside and Greater Manchester with Surrey focusing on Croydon.

Outside Merseyside and Greater Manchester Lancashire's installations are located in some 26 towns while in Surrey they are located in 49 towns and villages.

What confuses the picture is that Surrey has the highest traffic density in the country and the highest population ratio of residents employed outside the county – mainly in London.

A further analysis of Surrey would show that the majority of service industries (banking, insurance, etc) in the county are those which have elected to move away from the high overheads of central London sites with related travelling and commuting costs.

Most of the other installations are light manufacturing, pharmaceutical, scientific research and systems houses.

Recession

The same analysis of each county, bar Devon and Cornwall, would show broadly similar results.

There is no doubt that the recession has hit the South as hard as both the Midlands and the North, but I remain convinced that the future holds a great potential as yet untapped in the contract market.

Why?

During the past eight years, there has been remarkable growth in the contract programming market nation-wide, created by the general shortage of computer staff and the raising of standards by contract programming agencies.

More than ever, the contemporary customer is geared to using contract personnel to combat high workloads and skill shortages.

The customer now finds that a judicious mix of contract and permanent staff solves his short-term needs.

RICHARDSON: "Market holds great potential"

The contractor tends to be considered a valued adjunct to the permanent staff, rather than the necessary evil he or she was at one time.

Contract agencies have concentrated their efforts until now predominantly in the high-density centres of commerce and industry, and in the South – which has meant Croydon, Brighton, Portsmouth, Bournemouth, etc.

Message

That same analysis applied to Surrey, would show that only 80 of 340 installations within the county are based in Croydon, leaving 260 spread around those 49 satellite towns and villages and it is this area that has remained untouched.

The reasons are logical yet changing: first, many of the 260 installations are small in comparison with city sites and agencies have tended to concentrate on major development work undertaken by large companies.

Increasingly, however, smaller companies are finding the relatively high cost of software house involvement difficult to pass through the finance director and are prepared to heed the agency message – no strings, no never-commitment, full control, less cost.

Second, fewer contractors are prepared to work in the outlying areas, preferring to commute. This is true, but with the spiralling cost of commuting, an increasing number of contractors are seeking the benefit of uncluttered rather than rush-hour traffic.

Third, the agencies have preferred to locate themselves within the city centres – supposedly near the "action".

Agencies are now spreading their wings, however, effectively, providing their services from suburban and country bases.

What, then, does all this indicate for the experienced contractor and the computer professional who is considering contract work in the future?

Since the majority of computer installations are still in the city centres, it is not surprising that most contractors spend their time on contracts in these areas.

This familiarity with metropolitan work means that offers of work in other and remote locations are treated with scepticism.

The rates are no higher than those offered for city assignments, the travelling distances greater and the assignment would seem to lack the excitement of working in the big city environment.

Contract staff seem to share the misgivings of permanent staff about a move to the sticks.

Contractors who feel that rural assignment is something of a retrograde step are losing flexibility, which is perhaps the most important advantage of contract working.

Permanent staff need to weigh up the pros and cons of such a move as they will probably be changing house, school and social environment.

The short-term nature of a contract assignment means that the contractor need not consider such a move as final, but can evaluate the assignment knowing that he will be free to reassess the situation after a certain period.

Quiz

In advising contractors to consider assignments in areas like the South, the following factors should be taken into account:

Firstly, evaluate the job. Secondly, quiz the agency about locations, possible routes to work, etc.

If the assignment would mean staying away from home, ask the agency to find out approximate costs of lodgings and rentals.

Thirdly, use the internet to find out and confirm other details concerning day-to-day working on site. Customers are often quite willing to supply working hours to even those people who will be staying away from home during the week.

Several contract staff I have spoken to said they enjoyed the responsibility and the friends made on them as contract professionals.

To summarise, developments in the South as a new market, the tendency for large installations to move away from city centres, the wide variety of large and small installations in the area will mean more opportunities for contract staff to consider during 1981.

CONTRACTS..

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To be responsible for the management of the Computer Services Section in one of the largest Borough Councils. The section consists of 23 staff at the present time, and operates an ICL System 4/50 computer with magnetic tapes, discs and VDU's. Input is prepared on a 7 keystation Redifon Seechock system.

The Council is shortly to select a replacement computer which will provide greater opportunities for on-line computing facilities to many departments. You will be particularly involved in this process and subsequent plans for installation and implemention. A wide range of systems is already in operation and once the new computer is installed it is planned to develop a range of new systems as well as transfer of existing systems.

You should be experienced in the workings of a computer section, have experience of controlling and motivating staff, be able to communicate effectively with users at all levels and be capable of devising up-to-date plans and seeing them through to successful completion. Experience of working in Local Government would be an advantage and the council will show preference to a candidate offering any relevant qualification.

Benefits of working with the Authority include:

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Applications, giving full details of age, education and experience, together with the names of two referees, should be sent by 6th February, 1981 to the Borough Treasurer, P.O. Box 4, Town Hall, Brighton BN1 1JR.

If you wish to obtain further details of the post, please ring Mr F. S. Potter, Brighton (0273) 29801 Ext 439.

BOROUGH OF BRIGHTON (4062)

TSB COMPUTER CENTRE at Crawley in Sussex

We look after the needs of 240 Trustee Savings Bank branches through a major on-line VDU network controlled from our own purpose-built Centre. We are a team of true enthusiasts dedicated to serving the increasingly sophisticated banking requirements of the TSB's millions of customers. Staff turnover is low, so there are not many opportunities to join our team.

COMMUNICATIONS CONTROLLER

£6,576 — £8,646

We have recently installed a Burroughs B6800 Dual Processing System servicing an on-line network of more than 800 visual display terminals throughout the offices of the TSB South East and TSB of the Channel Islands.

A vacancy exists for an experienced Communications Controller who will be fully responsible for the efficient operation of the network. The successful applicant — who will report to the Chief Operator — will have an Assistant Communications Controller and a Technical Assistant to aid him/her in the day-to-day running of the network, together with sophisticated diagnostic and monitoring equipment.

Salary £6,576 to £8,646, dependent on experience.

House Mortgage Subsidy is also payable in approved cases.

Write to: Manager, Computer Division
TSB South East – Computer Centre
Russell Way, Three Bridges, Crawley, West Sussex RH10 1LU

(4073)

Recruitment LOGISTIX In Informatics

Microprocessor Engineers

Switzerland: Salaries to SwF. 62,000

Our client's software development Headquarters are situated near Zurich. We have an exclusive assignment to recruit several Software Development Engineers to join the Company's permanent staff. A Bachelor or Masters Degree in Electronics, Electrical Engineering or Computer Sciences is mandatory. All candidates must offer a minimum of four years' involvement in microprocessor software development. There is a preference for those fully familiar with Motorola 6800 hardware and software or as a secondary consideration on Intel 8085/6, Zilog Z80. Of prime importance is a real enthusiasm to relocate to Switzerland for a minimum period of two years. Consequently, those who can show some German language ability will be favourably considered. Every assistance will be given in relocation including the cost of removal of all personal effects and the provision of temporary accommodation and language courses. Initial interviews will take place in London, after which short-listed candidates will spend two days at the Company's premises.

Ref. L/S/A.

Customer Support

W. Home Counties: Salary to £10K

Due to the steady expansion of its client base, a leading mini-computer manufacturer has recently opened a customer support centre to service the Western Home Counties. Consequently, additional Programmers and Analyst/Programmers are urgently required to join their existing teams. At least two years' commercial programming experience combined with the ability to liaise with clients is essential as is fluency in either Cobol or Basic. Our clients have a stated preference for candidates with exposure to either DEC's PDP range or Systime's 5/6000 Series equipment. However, applicants with experience on any leading commercially orientated mini-computer should not be deterred from applying.

Ref. L/S/B

Management Consultants

London: Salary to £15K

Our client, based in Central London, has an enviable reputation as one of the U.K.'s most prestigious Management Consultancies. An expanding client base in S.E. England has produced vacancies for additional Consultants to join existing project teams. All candidates must be self-confident, presentable and have good personal communication skills. It is anticipated that you will be a graduate aged 28 to 34 with the ability to appreciate problems from a business, technical and political point-of-view. Particular requirements are for Information Consultants who have been involved in the selection and use of PABX equipment or who have had exposure to electronic mailing systems. Consultants with a knowledge of structured design techniques, data management or networking in a commercial data processing environment are also invited to apply.

Ref. L/S/C

IBM Programmers

Holland: Salary to £18K

A leading multi-national with Data Centres throughout the world is seeking Applications and Systems Programmers for its IBM 3031 installation in Holland. Applications Programmers should have a minimum of 12 months' experience in COBOL or PL/1 on any large IBM mainframe computer. Those who have participated in the program development of an on-line system or who have written and developed programs under IMS will be particularly welcome. Systems Programmers must have recent experience in the implementation of SYSGENS, releases and enhancements and should be familiar with MVS, TSO, ACF/VTAM or IMS/VS. Additional knowledge of PL/1 is advantageous.

Ref. L/S/D

Coral 66 Programmers

Sthn. H. Counties: Salary to £10K

A leading Systems House and Consultancy based South of Thames and within 40 minutes' drive of Central London and The City has requested LOGISTIX to identify and recruit several CORAL 66 Programmers. You will join a team already engaged in the design, development and implementation of a new military and defence system. It is particularly advantageous to offer previous programming design and development experience in the areas of radar, tracking and surveillance. Particular hardware experience is not important but a knowledge of PDP-11 hardware and systems software will certainly reflect in the salary offered.

Ref. L/S/E

Oil & Seismology

Central London: Salary to £13K

A well-respected Company participating in the development of advanced oil and seismic applications is seeking additional project team members for its Central London operations. Applications Programmers, Systems Analysts and Project Leaders should offer commercial experience in a TP monitor, DBMS or distributed processing environment. Programmers should offer a minimum of one year's FORTRAN experience whilst Systems Analysts and Project Leaders should have been involved in the inception and live running of at least one major on-line system. Additionally, candidates will be considered to have relevant skills if they have programmed or designed in areas of sales forecasting / budgetary applications, refinery and production data reporting, environmental / seismic data analysis and personnel movements systems. Salaries and fringe benefits are exemplary and will appeal to career orientated professionals.

Ref. L/S/F

Real-Time Applications

German Speaking: Salary to Dm. 70K

A well-established Systems House with a number of projects currently engaged in the development of software both in-houses and on customer sites, has an urgent requirement for additional Consultants / Team Leaders and Programmers. All applicants should have the ability to converse in German at a total fluency of 4 on the essential. At least five years' experience of Assembler, Coral, Algol or derivative languages is a minimum requirement for all positions. Candidates for the senior vacancies will be expected to possess demonstrable man management skills and an in-depth knowledge of Systems Design techniques.

Ref. L/S/G

Logistix, 10 Grenville Place London SW7 4RH

01-373 3483 LOGISTIX Telex: 298800

UNIVERSITY OF SOUTHAMPTON
COMPUTING SERVICE

OPERATIONS CONTROLLER

Applications are invited for the post of Operations Controller for the University's Computing Service. The Service provides comprehensive on-line and local batch facilities for all Faculties of the University, and has links to London and Manchester. The main central equipment consists of a dual-processor ICL 2970, a Honeywell 6080 and a PDP 11/45.

The Operations Controller will be responsible for the efficient day-to-day provision of all the real-time and batch services. Additional duties will include the selection and training of operations and data control staff, planning the physical development of the installation and its communications network, advising on the acquisition of computing, communications and peripheral equipment and maintaining close liaison with suppliers.

Applicants must have appropriate experience with large computers. The ability to motivate staff and to speak and write lucidly is also essential.

The post is a permanent one, with its salary related to the academic scales. Starting salary will be within the range £5505-£9595 p.a. (subject to review).

Applications (2 copies) giving date of birth, full curriculum vitae and the names and addresses of two referees should be sent to Mrs. P. Vaughan-Smith, Staffing Department, The University, Southampton, SO9 5NH, as soon as possible. Please quote reference 1177/A/CW. (4023)

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Education Committee

Supply of Microprocessors

Tenders are invited for the supply of microprocessors and allied equipment for use in schools.

A form of tender and a document specifying the types of equipment involved is obtainable from R. D. Nixon, Director of Education, Civic Centre, Darwall Street, Walsall, WS1 1DQ, and tenders must be returned to the Chief Executive and Town Clerk not later than 12 noon on Friday, January 30, 1981. (4041)

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Targa

SYSTEMS AND PROGRAMMING

CITY — ANALYST (BANKING) — c £11,000

The London Branch of a major European bank is about to commence development of its banking systems and requires a SYSTEMS ANALYST to complement the existing team. The ideal applicant will have at least one year's experience as an Analyst and should have been involved in a project from feasibility to implementation. It is also essential that experience of FOREIGN EXCHANGE and REAL TIME systems forms part of the background. Excellent banking fringe benefits apply. Ref. R.3177.

CITY — RECRUITMENT CONSULTANT — c £10,000

Targa Computer Services which was established in 1978 is part of a group of companies serving the computer industry. We seek a CONSULTANT to expand activities within the more SENIOR range of applicants. Ideal candidates will be over 25 with experience of SYSTEMS ANALYSIS or PROGRAMMING and have the ability to assess people and communicate effectively at all levels, advising clients of salary levels, advertising and job specification. Generous basic salary, incentives and benefits are offered. Ref: R.3187.

ESSEX (S.E.) — CHIEF PROGRAMMER — c £11,000

A leading company in the leisure industry seeks a Chief Programmer to lead an existing team. Ideal candidates will be familiar with structured programming techniques and have the management skills to recruit, train and develop staff, together with the ability to assist at the systems design stage. A COBOL background is essential and exposure to recent IBM hardware together with CICS a definite advantage. Benefits include relocation, bonus and flexitime. Ref: R.3184.

CITY — COBOL PROGRAMMERS — c £7,000

A leading City-based International Company seeks COBOL programmers with upwards of two years' experience. Very bright young people with UNIVAC or IBM experience, together with an exposure to on-line programme development, DATABASE and sales order processing would be particularly welcome to apply. This is a development opportunity in an expanding company offering excellent fringe benefits. Ref: R.3182.

W. END — PROGRAMMER/ANALYSTS — £6-11,000

A number of staff are required by this internationally known company based in the West End. Very well qualified TRAINEES will be considered but a good numerate degree is essential and a knowledge of OPERATIONS RESEARCH and IBM equipment helpful. The programming language is FORTRAN. Ref: R.3188.

CITY — PROGRAMMERS (BANKING) — £7-10,000

We require programmers and SENIOR programmers for leading city-based European banks. AIMS experience is essential and demonstrable supervisory or management abilities will be required by the senior people. The usual fringe benefits will apply. Ref: R.3176/8.

ESSEX — ANALYST/PROGRAMMERS — £7-10,000

Several analyst programmers are required to work in a recently installed UNIVAC 1100/81 installation. A COBOL background together with expertise in FILE-TAB, UNITED and applications work on FINANCIAL or MANUFACTURING systems is required. There is also a requirement for an ANALYST with considerable DATABASE experience. Ref: R.3174/3.

OPERATIONS

OPERATORS (Various) — £6000

Vacancies exist for all levels of Operator for a Company based South of London who use IBM hardware utilising OS/VS1 and MVS. The current configuration comprises 370/158 & 3031. A standard 3-shift system is in operation. Successful applicants can expect a very good salary and many chances of career progression. Ref: 3162.

PDP11/70 OPERATORS — S. LONDON — £HIGH-NEG.

Our client, a large well-known concern in S. London is currently looking for an experienced OPERATOR or SEN/OPERATOR with at least 2 years plus current experience using a PDP11/70 running under RSX11. You should be of smart appearance, able to demonstrate your supervisory capabilities/skills and be able to motivate staff under you. Benefits for this position are superb, namely, subsidised mortgage, NCP, BUPA, L/A, STL and LV. Ref: 3186.

ICL SYSTEM 4 OPERATOR — S. LONDON — to £8,300

Based in S. LONDON our client is looking for an experienced SYSTEM 4 operator, if you have between 1-4 years experience on SYS4 and would like to progress our client would like to hear from you. There are possibilities in the future of moving onto their larger 2900 systems. The company also offer a first-class benefits package. Ref. 2258.

IBM OS/DOS OPERATORS — to £8,500

Vacancies exist for various levels of computer operators who have worked on IBM 360/370 range computers. A knowledge of either OS or DOS Operating Systems is preferred, however, training will be given in all aspects of operations and technical areas. Excellent career prospects for people with the right aptitude and temperament together with man-management abilities. Ref: GEN.OS1.

HONEYWELL/GCOS OPERATOR — c £9,000

This Essex-based company are looking for an experienced H58 operator with at least 1 year's good GCOS exp., including a good knowledge of JCL techniques. If you want to work in a secure and expanding company with good prospects for moving towards programming or, tech. support then phone for fuller details. Ref: 2246.

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(4030)

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Candidates are invited to submit curriculum vitaes if preferred where confidentiality is guaranteed.

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CW 3/4 Tricia

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IBM	SYS. 3 DOS/VSE COBOL RPGII	LONDON	3 MTHS +
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UNIVERSITY OF SOUTHAMPTON
Microprocessor Service
Applications are invited for a new appointment in the Computing Service to initiate and develop a microprocessor and microcomputer development service to all Departments in the University. This service will, in particular, concentrate on Systems and Software aspects and will take place in close collaboration with the Department of Electronics to ensure a comprehensive service. Other related developments in the Computing Service include the introduction of a University wide digital communications system and the mechanisation of production processes.
The salary scale for the appointment will be within a range from £5805-£11575 p.o. (starting salary will depend on qualifications and experience).
Applications with a curriculum vitae and the name and addresses of three referees should be sent to Mrs. P. Vaughan-Smith, Staffing Department, The University, Southampton, SO9 5NH, from whom further particulars may be obtained. Please quote ref: 1171/A/CW. (4072)

OXFORD POLYTECHNIC
Department of Mathematics Statistics and Computing

TEMPORARY LECTURER in COMPUTER STUDIES

required for one term only from April 1981. The successful applicant will be particularly involved in teaching programming and related topics to first-year students on the Modular Course and HNC/D in Computer Studies.
Salary, according to qualifications and experience will be in the range £6013-£9702.
Further particulars and application forms may be obtained from the Acting Head of Department of Mathematics, Statistics and Computing, Oxford Polytechnic, Oxford, OX3 0BP. (4084)

OVERSEAS VIA I.A.

SYSTEMS PROGRAMMER required to work on an IBM 4341 running under OS/VS1 using CICS, VSTA, VTAM etc. The work will involve general maintenance of the systems, housekeeping and file maintenence. Knowledge of the Dutch language advantageous.
Location: The Netherlands

ANALYST/PROGRAMMER required to program in ASSEMBLER on MINI hardware. Work involves the development of scientific X-ray application systems.
Location: The Netherlands

SENIOR SYSTEMS ANALYST/PROGRAMMER required with a good knowledge of DL/I and COBOL. Hardware in use IBM 4341 running under DOS/VSE and CICS. Knowledge of the IBM package COPPICS advantageous, not essential.
Applications to be worked on include an on-line production/inventory control system and other materials management modules.
Location: The Netherlands

MINI/MICRO specialists required to write USER REFERENCE MANUALS for a new range of MICRO's being developed.
Location: Vienna

SYSTEMS SOFTWARE ENGINEER required with an in depth IBM UTILITIES knowledge to work on an IBM 4341 running under DOS/VSE using CICS, MVB, TSO, VTAM, MCP etc.
Location: France, good knowledge of the French language essential

SENIOR COBOL PROGRAMMER with program design experience in business applications to work on a new dedicated machine. Small business computer experience essential.
Location: The Netherlands

ANALYST PROGRAMMERS and **TEAM LEADERS** with excellent COBOL, are required to work on the conversion of a number of systems to IBM hardware. Other D.P. languages required are RPG II, FORTRAN and ASSEMBLER. Applications range over scientific, engineering and petro-chemical subjects.
An in-depth knowledge of any of the following IBM UTILITIES will be advantageous: CMS, TSO, VSAM, VTAM and FOURMOST.
Location: The Netherlands

ANALYST PROGRAMMERS with experience of REAL-TIME TELEPHONE SWITCHING software.
Location: Paris

TECHNICAL AUTHORS/TRANSLATORS with a basic electronics knowledge and/or digital M.O.O. systems experience to write and translate documentation from French to English or German to English. Some wire-guided missile or optics experience preferable.
Location: Paris

Outlined above is a selection of current requirements. Space and time make it impossible to list all the opportunities available. Therefore, if you would like to work overseas and for a highly-respected service company, please telephone or send your career resumé to me because I may well already have an excellent opportunity to offer you.

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UNIVERSITY OF SOUTHAMPTON

PROGRAMMING STAFF

The University Computing Service is seeking additional programming staff to assist in the support and development of its Service. The Service provides extensive batch and interactive facilities based currently on three local systems — a Prime 550 (CL 297C), a Honeywell 6060 and a PDP 11/45, and uses facilities on London and Manchester University computers. In addition to the support of mainframe services, a Microprocessor Development Service is being established and development work is being carried out in the areas of communications, with an emphasis on campus networks, the rationalisation of facilities, database usage, and the development of user support techniques.

Applicants should possess a degree or equivalent, and have relevant experience (for certain posts an engineering background would be an advantage).

The appointment will be in the salary range 1B or 1A: £4785-£9580 per annum. The starting salary will depend upon qualifications and experience.

Applications (2 copies) giving curriculum vitae, qualifications and experience, together with the names and addresses of two referees, should be sent to Mrs. P. Vaughan-Smith, Staffing Department, The University, Southampton, SO9 5NH, from whom further particulars may be obtained. Please quote reference 1178/A/CW. (4073)

UNIVERSITY OF ST. ANDREWS COMPUTING LABORATORY

COMMUNICATIONS PROGRAMMER

The University Computing Laboratory has a vacancy in its system group for a person to undertake projects in the field of computer communications.

Projects currently in hand include:
a. — an X.25 connection to the JIPS public switched network (Packet-SW), wideband connection to EPSRC and user software for terminal concentrators, file and mail systems. Performance work is being undertaken for PAD switches.
b. a Cambridge Ring study to implement a ring connecting the many existing computers within the main computer laboratory, with the eventual replacement of protocols for the Cambridge to mini-computers link.
c. the implementation of protocols for the Cambridge Ring on mini-computers and microprocessors.
The Laboratory provides a service to the whole University on over 100 terminals, 11/780, Cambridge Ring and Ethernet nodes, soon to be connected to the Experimental Packet-Switched System. Computers include DEC KL10, KA10 and KI10 systems, Cambridge Ring microprocessors, Unix and maintenance of DEC, IBM and Honeywell systems, and DIGITAL System-10 and HONEYWELL 66/60 systems.
The appointment will be in the Grades IA or IB (Senior Scientific Officer) (£6,354-£9,580) which is currently under review. There are attractive conditions of service including 5 weeks' annual holiday entitlement. Applications should be submitted on forms obtainable from the Secretary, Computing Laboratory, University of St. Andrews, North Haugh, St. Andrews, Fife, KY16 9SX, from whom further particulars may be obtained. (4082)

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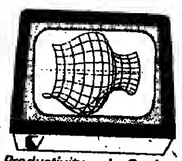

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Salaries will be as shown above plus profit sharing bonus, and the associated benefits package will include free BUPA and life assurance cover. Assistance will be given with relocation expenses, where appropriate.

We shall be commencing interviews in Regional Centres for these positions from 19th January 1981 so if you are interested please contact Mike Fuller, Customer Support Manager, or Bob Powell, Administration Manager, Computervision Limited, Penn Street Village, Amersham, Bucks. Tel: High Wycombe (0494) 714771, quoting Ref CV/12. Alternatively ring the 24 hour ASL Answaphone Service on 01-629 1844 for an application form, quoting Ref CV/12.

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(40289)

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on: 061-833 0427 (24 Hr. Answering Service)
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Salary scale: £4795 to £8095 or £5055 to £9595 p.a., depending upon age and experience to develop and support local and wide area networking systems. Real-time systems or data communications experience required. **Ref. 282/80.**

MACHINE ROOM CONTROLLER

Salary scale: £4795 to £8095 p.a., depending upon age and experience, required for the day-to-day running of the central computer systems and control of associated operating staff. **Ref. 255/80.**

ASSISTANT COMPUTER OFFICER

Salary scale: £4795 to £6985 p.a., depending upon age and experience, required to work with a section which produces the manuals describing the computer services offered to our 10,000 users. **Ref. 256/80.**

If you would enjoy the challenge of working in a stimulating environment with the prospects of a rewarding career which offers a good pension scheme and generous holiday entitlement, send for further information and an application form (returnable by 6th February, 1981) to the Registrar, University of Manchester, Oxford Road, Manchester M13 9PL, quoting the appropriate reference.

UK Sales Manager

Computer GRAPHICS

£25k+

NEGOTIABLE GUARANTEE + CAR

SOUTH OF ENGLAND

Our Client is a respected and well established Manufacturer of graphics systems and peripherals. They are acknowledged as a leader in their field and have an impressive user base spanning many sectors of industry and science. Encouraged by a strong financial position, excellent products and committed Management their projected growth is impressive.

In order to capitalise upon their continuing success, SCR have been asked to identify an experienced Sales Manager, preferably within the graphics industry. Candidates should have a proven track record of success todate and must have the ability to not only motivate the growing sales force, but be willing to involve themselves in sales and man-management. Our Client will be looking for a degree of commitment, enthusiasm and a genuine desire to grow with the Company. In return they offer high earnings and the chance to work for a dynamic Organisation with genuine career prospects in the United Kingdom and Europe.

For an immediate and confidential interview contact, SIMON LEVER
ON 01-935 0671 (24 hour answering service)
OR 021-420 1574 (evenings and weekends)
If it is preferred please send Curriculum Vitae which will be treated in total confidence.

SCR

Specialist Computer Recruitment Ltd

London 01-935 0671 3 Mendeville Place, Wigmore Street, London W1M 6LB
Birmingham 021-236 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
Brussels 010 322-640.7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles

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Some companies offer variety, excitement and involvement.

Others offer security, a realistic salary and good career progression.

TEAM LEADERS

£8,000–£9,000+car+benefits

Systems Analysis

Responsibilities will include the preparation of business proposals, systems design and implementation.

Programming

To estimate and control the programming element of projects by leading a small team of Programmers. Assisting with the solution of design problems; close liaison with the Systems Analysis Team Leaders.

Technical Support

Responsibilities include technical systems design, hardware/software evaluation and development of technical software. Will undertake special assignments of a highly technical nature.

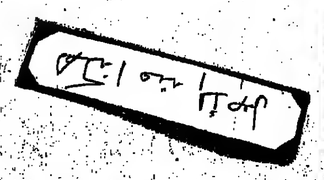
Currently there are approximately 50 projects under development including a major finance system using on line IMS and ADF facilities, a real time vehicle control system based on DEC 11/70 equipment and a private Viewdata system for the BL Cars UK dealer network.

Candidates must have proven ability in leading small teams and will need at least 3 years' IBM, PL1, TSO, IMS DB/DC mainframe experience or PDP 11, RSX RTL/2 minicomputer experience.

Salaries in a range £8,000–£9,000 plus car, generous relocation package where necessary. All the posts are based at our new headquarters in Redditch, rurally situated between Birmingham and the Cotswolds.

For full details of any of the above posts ring Sally Lenton on Redditch (0527) 64274 ext. 330 or write to Lyn Morgan, BL Systems Ltd, Grosvenor House, Prospect Hill, Redditch, Worcs. Men and women equally welcome.

One company offers both.



ANALYST/ PROGRAMMER

Braun Ireland Limited, an expanding constituent of the Gillette Company, employs in excess of 800 people in the manufacture of electronic products in the home appliance field.

The plant is located at Carlow, one hour's drive from Dublin.

The company currently operates an advanced IBM/34 installation of the maximum configuration available, 22 workstations, Maplex manufacturing modules, full suite of on-line accounting modules, IBM 5230 time entry system and a microprocessor-based production monitoring system.

Candidates should have several years' RPG II experience, preferably on IBM/34. Knowledge of Maplex manufacturing modules would be a distinct advantage.

Salary will not be a limiting factor.

An attractive fringe benefit package and relocation allowances, if applicable, will be paid.

Candidates should send comprehensive personal, career and salary details to:

The Personnel Manager
BRAUN IRELAND LIMITED
Dublin Road
Carlow

UNIVERSITY OF GLASGOW
Appointments under the Management Scheme

DATA PROCESSING CONTROLLER

Applications are invited from qualified persons for the post of DATA PROCESSING CONTROLLER responsible for the maintenance of student records for the University's Records Office. Previous experience of working with computers would be an advantage, but is not essential. The appointment will be made on the national Grade 1A scale for Other Related Staff, in the range £5505–£6958 (under review) with initial placement dependent upon age and experience.

Further particulars may be obtained from the Secretary of the University Court (Room 16), University of Glasgow, Glasgow, G12 8QQ, with whom applications (if applied, giving the names and addresses of three referees, should be lodged on or before January 30, 1981.

In reply please quote Ref. No. 47181.

EUROPEAN SERVICE

CADO Systems are innovators in small business systems and one of America's fastest growing companies. An opportunity exists for a dynamic Service Engineer to operate out of their European headquarters in Monte Carlo. The successful applicant will be expected to travel as required to service a network of systems throughout Europe and to assist in providing technical support to agents throughout Europe. Excellent career potential. Experience in the maintenance of systems including mini-computers and associated peripherals is essential; experience in a support role and knowledge of languages would be helpful.

Please apply with C.V. to:

D. M. Lloyd
CADO SYSTEMS INTERNATIONAL
(Export)
31 Avenue Princesse Grace
Monte Carlo PTE Monaco
Telephone: (France) (93) 30 44 28

CADO SYSTEMS INTERNATIONAL

Computer Graduate for Direct Marketing

Christian Brann Limited are European leaders in direct mail techniques. Our business is expanding, particularly in the exciting and dynamic area of computers.

We handle lists for clients, managing them, updating them, and using them to produce highly creative direct mail shots that are personalised to millions of people.

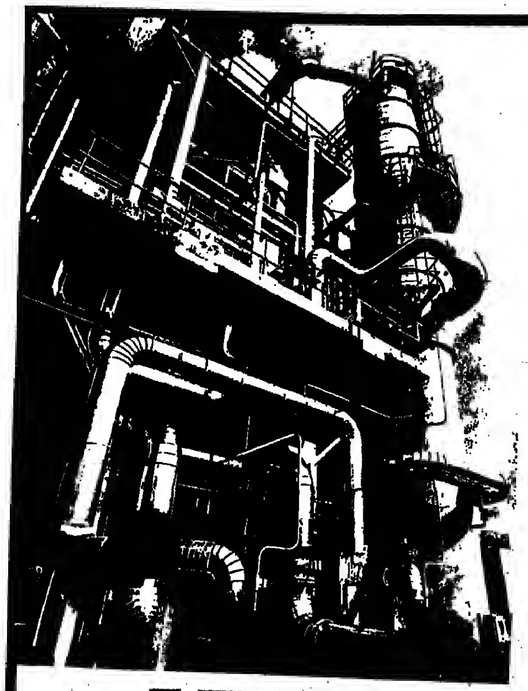
The computer department also handles the fulfilment of orders for book clubs and other mail order enterprises. There is also a list research unit, devoted to finding, acquiring, and broking lists of millions of individuals.

An opportunity arises now for a computer sciences graduate to join this rapidly expanding team as Special Projects Officer, reporting directly to the Computer Services Director. We currently have a number of major new initiatives in the use and applications of computers in direct mail, and the role of the Special Projects Officer will be to develop these, produce plans, and supervise the implementation of each plan.

The successful applicant will have the potential to become a manager within any one of our major areas of computer-based activity, at the head of a skilled team, and with full profit responsibility.

Applicants should have some knowledge of business, and ideally one subjects covered at graduate level, to the Computer Services Director, Christian Brann Limited, Phoenix Way, Cirencester, Glos., GL7 1RY.

CB



Senior Sales Engineer
PROCESS CONTROL

c. £18,000 per annum
(open ended)
NEGOTIABLE GUARANTEE
plus Company Car

West U.K.
(Candidates from any south of England areas are invited to reply)

Extensive Training will be given.

We are a successful leading manufacturer of automatic computer systems for the control of process plant in batch, continuous, or distributed control modes. Our total capability of in-house design, manufacture, software and support provides complete control of industrial processes of all types by utilising a modular system philosophy backed up by a nationwide team of engineers.

Our planned expansion has created an opportunity for a sales professional with a strong process control bias. Candidates must be fully conversant with P.C. applications, that will typically involve bulk products.

It is essential that you have the ability to influence people by creating confidence and be happy at all negotiation levels through to the board room, without loosing sight of the main objective; to sell the system. Your professionalism, dedication and success will be rewarded by our excellent earnings package together with genuine career opportunities. The Company attach great importance to their further penetration of the process control market and envisage a high growth rate in this area.

For an immediate and confidential interview, contact our advising consultant, Paul Pearce on
021-236 3781 (24 hour answering service)
or 021-308 4908 (evenings and weekends)

SCI
Specialist Computer Recruitment Ltd

London 01-935 0671 3 Mandeville Place, Wigmore Street, London W1M 5LB
Birmingham 021-238 3781 35-37 Great Charles Street, Queensway, Birmingham B3 3JY
Manchester 061-833 0427 Blackfriars House, The Parsonage, Manchester M3 2JA
Brussels 010 322-648 7151/71 Avenue Louise 327, Boite 4, 1050 Bruxelles

Computer Services Association

LUNDY-FARRINGTON LIMITED

The Company is a leader in the fields of OCR, MICR and Interactive Graphic Display systems. The following appointments carry very high salaries and other benefits including B.U.P.A. membership.

U.K. SALES MANAGER
to establish and operate from a new office in the West London area.

SALES EXECUTIVE
with a history of sound accomplishments in the fields of OCR, MICR and Terminal Data Entry systems in Banking Finance and Commerce.

SALES EXECUTIVE
CAD/CAM Graphic Display Systems. Location : W. London or Portsmouth.

Written application should be made to the principal European office at LUNDY HOUSE, 18 ORDNANCE ROW, PORTSMOUTH, HANTS, PO1 3DN.

A Subsidiary of LUNDY ELECTRONICS & SYSTEMS (INC. JAMES LOVE)

MANAGEMENT & EXECUTIVE SELECTION

telephone 01-637 9611

MINI COMPUTER ENGINEERS

South Yorkshire · to £12K+Car

A number of experienced, enthusiastic engineers are required by our client to install and maintain their sophisticated computer systems in this region.

These positions are particularly interesting as they involve both the "Total System" and "Component Level" approaches to fault location, utilising Software and Hardware techniques.

Full product training will be given but candidates will be expected to have cpu, disc, tape, printer and component level experience. A Degree or HNC and a positive attitude are also essential qualifications.

Successful applicants can look forward to extending their knowledge in an interesting and rewarding role with a respected and progressive company.

Relocation allowances are available if required.

Contact Peter Gorton or Howard Wynne regarding this position on 01-637 9611.

(M008)

Suite 201/6 Albany House
324 Regent Street London W1

MANAGEMENT & EXECUTIVE SELECTION

ANALYST/PROGRAMMER
Central London — £8800 to £11800
A very large international Industrial/Commercial Company is seeking an Analyst Programmer. Applicants must have at least 2 years experience in commercial applications and at least 1 year's COBOL experience. Must have IBM 370/4300 or Hewlett Packard experience.

SENIOR PROGRAMMER
City — Up to £9250
A leading Service Organisation urgently seeks a Senior Programmer. Applicants must have at least 2 years programming experience, including experience of medium or large systems. Knowledge of IBM COBOL is required, preferably in an MVS environment.

SYSTEMS ANALYST
West End and City — £ Neg.
Two well-known Companies both have vacancies for Systems Analysts. For the posiion candidates must have at least 3 years' systems analysis experience and at least 1 year's programming experience is desirable. A level education or preferably a degree.

ANALYST/PROGRAMMER
Basingstoke — £6000-£8800
A world wide fast-moving consumer goods organisation is offering an excellent opportunity for an Analyst Programmer. Applicants must have at least 2-4 years' systems programming experience on COBOL. Excellent company benefits.

If you are interested in any of the above positions, please phone for an application form or write giving FULL details.

AMES PERSONNEL (M004)
Employment Agency Suite 14 Dryden Chambers
119 Oxford Street London W1R 1PA Tel 01 434 1106

SMR
Sales & Marketing Recruiters Ltd
Victoria House, 59 Regent Street, London W1R 7HH

SALES EXECUTIVES

Just in case you think we are merely the industry's leading supplier of career guidance for salesmen (to say nothing of sales training and market research!), we are currently recruiting candidates for over 100 selling jobs within more than 30 computer companies.

If you are seeking a career rather than just a selling job, contact Alasdair Scott or Alan Williams — we have the experience to understand your needs.

Tel: 01-734 9776

Ferranti Computer Systems Ltd.

Field Sales

PT7 Programmable Terminals are Advanced Alternatives to ICL 7502 and IBM 3270.

PT7 Programmable Terminals offer valuable additional facilities for the data processing manager and the terminal user alike.

PT7 Programmable Terminals offer the financial controller better price/performance ratios.

PT7 Programmable Terminals are already well established and, with several new product releases recently announced, are set to penetrate still further the terminal systems market.

PT7 Programmable Terminals selling at customer level is backed by a major advertising and exhibition campaign.

Ferranti Computer Systems is recruiting experienced Sales Personnel to cover the South of England, and persons with relevant experience in selling interactive terminals for connection to ICL and IBM computers are invited to apply for these rewarding positions.

Successful applicants will be paid an attractive salary, a company car is provided, there is a bonus scheme and the usual fringe benefits of a progressive company.

Apply in writing to Mark Freeman, Ferranti Computer Systems Ltd, Simonsway, Wythenshawe, Manchester M22 5LA.
Quoting reference BOAWD/15/CW or telephone 061-499 3355 Extension 229 or after working hours 061-485 2540.

(K014)

FERRANTI
Selling technology

OPERATIONS

Excellent opportunity for Senior Operators with a strong MVS/JCL background to join an international Company in Middlesex. Usual large Company benefits.
Ref: C218 — CIRCA £5,000

NCR OPERATORS
City based company is seeking operators with 12 months NCR criterion experience. Excellent Company benefits (subsidised mortgage and personal loans).
Ref: W2300 — CIRCA £5,000

VM OPERATORS
Large Company in North London.
Late night overtime available.
Ref: W2299 — CIRCA £5,500

OLIVETTI DATA CONTROL
Operations requires a Data Control Clerk with George II experience for their ICL 2900. Usual large company benefits.
Ref: W2301 — CIRCA £5,500

(K003)

01-486 8867
STIRLING EXECUTIVE PERSONNEL
128 WIGMORE STREET, LONDON W1H 9FE

FOR CLASSIFIED ADVERTISING USE DIRECT LINE 01-661 0121

THE UNIVERSITY OF ADELAIDE
Invites applications for appointment as a

LECTURER IN COMPUTER SCIENCE

Candidates should have a higher degree in Computing Science and show evidence of interest and capability in research and teaching and be prepared to undertake supervision of research students.

For teaching purposes, the University is equipped with 3 DEC VAX computers and has a CDC CYBER 173 for research work. The Department has its own PDP 11/40 for research purposes.

SALARY SCALE within the range $A17,738 x 7 — $A23,303 with superannuation.

FURTHER INFORMATION: A potential candidate should seek from the Registrar of the University the following documents:
(i) a general **Conditions of Appointment**, which include particulars of leave, superannuation, removal expenses, invalidity and study leave, and
(ii) a **Statement** giving particulars of such matters as help in housing, conference grants and special support for research.

The University will gladly supply any further information desired on request to the Registrar.

APPLICATIONS in duplicate, should give the information listed in the penultimate paragraph of the Statement and should reach the Registrar of the University, G.P.O. Box 498, Adelaide, South Australia, 5001, not later than 18 February, 1981.

(S014)

SOUTH YORKSHIRE POLICE
(SHEFFIELD)
WAITED FOR INTERVIEW

SENIOR SYSTEMS ANALYST
Grade PO1/2 (£7360 to £8721 per annum)

South Yorkshire Police seek a suitably qualified Systems Analyst to work with police officers engaged on the development and implementation of computer systems. Based at Police Headquarters in Sheffield the post offers a wide range of activities in advisory and system design work on computer, video, communication systems. A good knowledge of the organisation of the Police Service would be an advantage. Liaison with the computer staff of the South Yorkshire County Treasurer's Department will also be required. In addition to police applications the County Computer Unit runs an ICL 1904S.

The person selected will have programming experience, preferably with minicomputers and should be willing to work with Data General computers on the VME/B operating system.

Application forms are available from the Personnel Department, South Yorkshire County Council, Barker Road, Sheffield, S10 2JL. Telephone 78555, extension 3365 quoting reference number 2/1/81/CW. Closing date for receipt of applications 30th January, 1981.

THE SALES BIT

The high cost of failing to recruit sales personnel

THIS is the time of year when many sales managers, armed with their nice new shiny budgets, start to worry about the recruitment they should have completed in the final quarter of last year, but were too busy closing last minute business in order to meet their annual targets.

It is now, with a whole selling year ahead and the sales performance pressure taken off for a few weeks, that they have time to think about the implications of having an incomplete sales team and a sales target that does not take manpower shortages into account.

It is at this point in the proceedings that the learning curve between the arrival of a new recruit and the likely achievement of his first sales success is seen in its true and extended light. Now is when many sales managers begin to realise the importance of giving the right priority to sales recruitment at the right time, and handling the actual recruitment process efficiently.

Last September Sales and Marketing Recruiters carried out a recruitment assignment for a major computer company. The advertising campaign was successful and after the preliminary interviews had been completed we had a short-list of 15 appropriate candidates.

Pressure

The company's senior management was well pleased with both the volume of applicants and the quality of the cross-section of candidates they met.

Consequently, responsibility for processing the applicants was quickly passed to branch sales management. But by this time it was October and the pressure was also beginning to build up for closing a number of significant deals before the new year. As a result recruitment was given a relatively low priority.

Time went on, the candidates became restless, and several of them changed their minds or decided to take alternative offers of employment. Then the company decided to reorganise, which created considerable uncertainty about the size and organisation of teams.

Failure

More time passed and other candidates decided that the lack of progress was some measure of the company. Some simply decided to stay put or accepted offers elsewhere. Suddenly, and not without agitation by senior management, the branch sales managers began to rush around asking for interviews to be set up, but by then it was too late.

The better candidates were gone, and those that remained had lost considerable confidence in the company, or at least in its management. Not surprisingly the eventual outcome of the exercise was a total failure to recruit, even and thus alternative placement of the suspended candidates was not professionally sensible, the result was a significant loss to both the client and SMR. The total elapsed time was some three and a half months when the whole process from advertising to individual job offers should not have taken more than four to five weeks.

Priority

When we came to analyse the reason for the unusual occurrence of a completely failed recruitment campaign the reason was simple. It was not the company, the products, the income package, the personalities or recruitment methods.

It was simply the failure of branch management to give consistent top priority to interviewing and selection. There always seemed to be some event which demanded special priority, until it was too late.

Effective sales recruitment is one of the most important elements of the sales manager's role. One only has to consider the lost profits related to unobtained revenue because of unmanned sales territories to realise how costly the failure to recruit can be.

In my experience the principal reasons for this kind of problem are lack of priority to recruitment as a management function, and insufficient urgency in completing the selection process once it has begun.

Next week I would like to discuss some of the factors that must be taken into account to achieve a reasonable level of success in recruiting sales personnel.

TRADER

CONFERENCES

Software engineering

SOFTWARE engineering tools will be demonstrated at the fifth International Conference on Software Engineering, to be held at the Town and County Hall, San Diego, California. Demonstrations by commercial, academic and government tool builders are expected during the event, which is sponsored by the IEEE Computer Society, the National Bureau of Standards and the Association for Computing Machinery Special Interest Group on Software. The conference will take place between March 9-12. For further information contact Ray Houghton, National Bureau of Standards, Technology Building, Room A265, Washington, DC 20234.

THE merchandising, marketing and management seminars and tours, organised by NCR are now in their 25th year. To celebrate, the company is holding Silver Jubilee Yes! Tours, the first of which will cover the West Coast of America with visits to San Francisco, San Diego, San Antonio, Houston, Dallas and Atlanta. The second will leave Heathrow on March 12, returning on March 23. Subject for the seminar will be distribution trends for food, general merchandise and durables. Prices start at £910. The last booking date is February 6. For further details contact Gordon Makins at NCR, 206 Marylebone Road, London NW1 6LY. Telephone 01-387 5599.

Puzzle Answer

1/9 = 6381/57429 is the only possibility if the 8 and 1 are to lie together.

Systems, Database, and Programming Staff

required by Britain's leading property company.

(Salaries £7,000-£12,500 plus substantial benefits)

Land Securities (Menegement) Limited, the leeding property compeny, is in the process of developing e range of new computer systems. These will be besed on a recently installed Honeywell Level 64, will utilise TDS and IDSII software and will incorporate a network of terminels both in the Head Office and Regional Offices.

The development team is ebout to be expanded, and applications for the following vacancies are invited from men or women who preferably heve had experiance of working with a Honeywell Level 64 or 66 computer in en on-line environment. However, epplications will be considered from those with experience of the use of eny mainframe teleprocessing monitor end/or Codasyl database menegement system. The possession of e degree or appropriate professional qualification would be an advantage.

SENIOR ANALYSTS experienced in the identification of user requirements at the business level end the translation of such requirements into computer systems specifications. Experience of property and/or financial systems would be an advantage.

A CHIEF PROGRAMMER to manage a team of around 15 programmers. Candidates must have had experience of leading e team of progremmers working on the development of on-line systems.

A DATABASE specialist experienced in data analysis, database design techniques, the use of e deta dictionery end the control of a database used to support on-line systems.

ANALYST PROGRAMMERS and **PROGRAMMERS** with upwards of two years experience of the specification and/or programming of computer systems.

Starting salaries between £7,000 and £12,500 are envisaged. Other benefits include e non-contributory pension scheme, annual bonus, a share participation scheme and free BUPA and restaurant facilities.

Please apply with brief details of quelifications end experience to:

Menagement Services Manager,
Land Securities (Menegement) Limited,
Landsec House, 21 New Fetter Lane, LONDON EC4P 4PY.

Programmer/Analyst

Burmah-Castrol worldwide

In this new vacancy, arising within our Finance Co-ordination area, you would be working with a small group of people responsible for the collection and processing of financial data from our worldwide organisation.

You would be responsible for providing support for an on-line system (APL based) and could expect to play an active part in further system developments. Although the system is essentially geared towards financial reporting, future requirements will be of increasingly wider scope and will be coupled with ad hoc projects of a non-routine nature.

We are looking for someone who is likely to be a graduate with two or three years' experience as a programmer or programmer/analyst. In addition to technical ability, you will also need good communication skills and want to make a positive contribution.

This is an opportunity to develop your skills in a management information environment.

An attractive salary will be accompanied by a comprehensive benefits package including non-contributory pension and life assurance scheme and relocation assistance where necessary.

Please ring or write for an application form to David Freeston, Recruitment Manager, Burmah House, Pipers Way, Swindon, Wiltshire SN3 1RE. Telephone: 0793 47400.

Burmah

Project Manager

Microterminals.

W. Herts. **c. £10,000 + car**

Continuous expansion and a succeseful product has created the need for an additional Project Manager to assist in the Company's further penetration of the portable data capture market.

The successful candidate will be the principal contact between the client and the development group. The work requires knowledge of applications specification and development. You will have good personal communications skills and will work well under pressure.

Minicomputer Software

R ond D Centre.

N. Beds. **£7,000-£12,000**

Our client, the U.K. subsidiary of e U.S. minicomputer manufacturer, is continuing to expand its software development group in the U.K. Several experienced programmers are required for a number of project teems. Projects include on and off-line transaction processing, telecomms. networking, development tools, data base management systems and others. Attractive location, benefits and working atmosphere.

M.I.S. Development

Minicomputer based systems.

Herts. **£6,500-£10,000**

Our client has embarked on the development of new management information systems for in-house use.

Vacancies exist for:

Business Systems Analysts
Senior Programmers
Junior Programmers

Analysts need a background knowledge of Cobol plus good personal communications skills. Senior programmers must have previous business systems experience in Cobol. Junior programmers require 1-2 years Cobol. Usual large company benefits, plus relocation.

Real-Time Minis

Engineering Development Centre

S. Beds.

Telecomms. Team Leader	**to £10,000**
Systems Programmers	**to £9,000**
Technical Authors S/W & H/W	**to £8,500**

Advanced design and implementation projects involving the latest developments in computer communications skills are only part of the sophisticated computer systems being produced in this attractive new centre. The team leader must have proven experience with Bisync protocols and knowledge of X25, HDLC or similar. Programmers and Authors should have previous relevant computer systems experience.

Apply in confidence to Terry Harvey by sending personal and career details, or contact him for an application form, evenings Gt. Missenden (02406) 4706 or daytime as below.

HR **Harvey Recruitment**
Executive and Computing Personnel Consultants
500 Chesham House, 150 Regent Street,
London W1R 5FA Tel: 01-734 5351

SOFTWARE MANAGER UP TO £10,000

RAIR require a Software Manager to be responsible for software implementation and customer support for their advanced microcomputer range. Applicants should have sound knowledge of hardware and software in general and microcomputer software in particular.

Application forms and further details from RAIR Limited, 30-32 Neal Street, London WC2H 9PS, Telephone 01-836 4663.

RAIR

COMPUTER WEEKLY CLASSIFIED

DIRECT LINE 01-661 0121

the newspaper computer people rely on

Teleprocessing Programmer

Miles Laboratories are an international pharmaceutical company based in attractive surroundings in Stoke Poges.

We currently have a vacancy for a new member (male or female) in our efficient Data Processing team. Candidates should have several years' experience of RPGII/DOS VSE and IBM 4331 (or IBM 370)/VSAM/CICS and be educated to 'A' level standard.

In turn we offer the opportunity to become totally involved in a wide variety of applications in a company that appreciates a forward-looking DP function. The emphasis in future developments is toward expanding our on-line teleprocessing systems.

Benefits include over four weeks' holiday, subsidised staff restaurant, free life and health assurance and flexible working hours.

An excellent salary will be negotiated with the successful applicant.

Please write or ring (FARNHAM COMMON 2161) for an application form to: Mrs. N. S. Morgans, Personnel Manager, Miles Laboratories Limited, Stoke Court, Stoke Poges, SLOUGH SL2 4LY.

MILES

I4033I

SYSTEMS DESIGNERS

London and Bucks. To £16,000 plus car

Our client, a pacesetter in the Computer Services industry, seeks applicants with considerable experience in the design and implementation of computer systems, in particular of on-line systems and preferably with a knowledge of ICL 2900 series computers.

SENIOR CONSULTANTS

London Salary Negotiable

Fast-growing company in the Computer Services industry seeks Senior Consultants who have a wide computer applications experience and are able to deal with clients at high levels of management. Applications from candidates with previous management experience are of particular interest.

SYSTEMS ANALYSTS

Bucks., London and Herts. To £13,500

Several of our clients seek experienced analysts with some user definition experience and a background of extracting the right information from a variety of people.

DESIGNERS/IMPLEMENTORS

London To £13,500

Our client, a pacesetter in the Computer Services industry, seeks graduates with a minimum of 3 years' good real-time, on-line experience with large mainframes — preferably ICL 2950.

PROGRAMMERS/PROGRAMMER ANALYSTS

London, Herts., Bucks., and Middx. To £11,500

We would like to hear from candidates with good experience of one of the following languages/machines: Cobol/PL1/Fascal/8086/Assembler/IBM OS and DOS/VS (370/135, 370/145, 3033, 4341, System 34-38)/ICL 2900 series/PDP11 mini's/SEC mini's/LSI1/Zilog Z8001 VP, MVP & VS/British Olivetti 2030, 2030/280 or 8080 microprocessors.

Please telephone Bernard Innes for an initial discussion and an application form or write in confidence giving full personal and career details quoting reference CW 0111.

Executive Recruitment Services
Collins House,
56 Wootton Drive,
Hemel Hempstead. Herts. HP2 6LB
Tel: Hemel Hempstead (0442) 42418

COMPUTER OPERATOR

Pfizer Limited, part of the multi-national Pfizer Corporation, wish to recruit an experienced Computer Operator in their Data Processing Department. Ideally, applicants should have experience of operating either an IBM 370 or an IBM 4341 system. The hardware employed comprises 4 x 3340, 2 x 3344, 4 x 3420, 1403, 3505 and 3270 local T.P. The system is operated under OOS/VS with POWER and CICS. A three-shift system is operated to cover between the hours of 7.30 a.m. to 2 a.m. although this could change if operational requirements dictate. Own transport is essential.

Pfizer

In addition to a good basic weekly wage our Company offers a number of worthwhile benefits such as pension and life assurance cover schemes, sickness benefit provision, active Sports and Social Club and 22 days annual holiday.

Application forms are available from:
Mrs. S. I. Blissenden
Personnel and Welfare Officer
PFIZER LIMITED
Sandwich, Kent CT13 9NJ
Tel. Sandwich 613611
(extn. 3436)

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